INDEX OF AUTHORS' NAMES.

TRANSACTIONS. 1896.

(Marked T.); and to Proceedings of the Session 1895—1896, Nos. 155—168; Nov., 1895—June, 1896 (marked P.).

A.

Abel, (*Sir*), *Frederick Augustus*, Hofmann Memorial Lecture: the history of the Royal College of Chemistry, and reminiscences of Hofmann's professorship, T., 580; P., **1893**, 135.

Allen, *Alfred Henry*, an improved method of determining urea by the hypobromite process, P., **1896**, 31; discussion, *ibid.*, 33.

Andrews, *Ernest Robert*. See *Raphael* **Meldola.**

Appleyard, *James Robert*. See *James* **Walker.**

Archdeacon, *William Henry*. See *Julius Berend* **Cohen.**

Armstrong, *Henry Edward*, Hofmann Memorial Lecture: notes on Hofmann's scientific work, T., 637.

—— studies of the terpenes and allied compounds: note on ketopinic acid —a product of the oxidation of the solid hydrichloride (chlorocamphydrene) prepared from pinene, T., 1397; P., **1896**, 167.

—— the origin of colour. No. 11. The yellow colour of 2:3-hydroxynaphthoic acid, P., **1896**, 42.

—— note on etherification, P., **1896**, 43.

—— the relation of pinene to citrene, P., **1896**, 44.

—— the conditions involved in the occurrence of inversion in the case of asymmetric (optically active) compounds, P., **1896**, 45.

Armstrong, *Henry Edward*, and *William Palmer* **Wynne,** 2 : 1-β-naphthylaminesulphonic acid and the corresponding chloronaphthalenesulphonic acid, P., **1895**, 238.

—— —— 1 : 3-α-naphthylaminesulphonic acid and the corresponding chloronaphthalenesulphonic acid, P., **1895**, 238.

Armstrong, *Henry Edward*, and *William Palmer* **Wynne,** studies on the constitution of the tri-derivatives of naphthalene. No. 15. The disulphonic acids obtained by sulphonating 1 : 3-α-naphthylamine- and 1:3-α-chloronaphthalene-sulphonic acids, P., **1895**, 240.

B.

Bablich, *Hermann*. See *Arthur George* **Perkin.**

Baker, *H. Brereton*. See *Harold Baily* **Dixon.**

Barnett, *Robert E.* See *William Augustus* **Tilden.**

Barr, *John M.* See *George Gerald* **Henderson.**

Bedson, *Peter Phillips*, Lothar Meyer Memorial Lecture, T., 1403; P., **1896**, 119.

Bentley, *William Henry*, *Edward* **Haworth,** and *William Henry* **Perkin,** jun., on γ-phenoxy-derivatives of malonic acid and acetic acid, and various compounds used in the synthesis of these acids, T., 161; P., **1896**, 35.

Bentley, *William Henry*, and *William Henry* **Perkin,** jun., note on γ-acetobutyric acid, T., 1510.

—— —— on the xylic and xylidinic acids, P., **1896**, 79.

Bentley, *William Henry*, *William Henry* **Perkin,** jun., and *Jocelyn Field* **Thorpe,** *cis*- and *trans*-methylisopropylsuccinic acid, T., 270; P., **1896**, 64.

Bevan, *Edward John*. See *Charles Frederick* **Cross.**

Bone, *William Arthur*, and *David Smiles* **Jordan,** the union of carbon and hydrogen, P., **1896**, 60.

Bone, *William Arthur*, and *William Henry* **Perkin,** jun., the symmetrical dimethylsuccinic acids, T., 253; P., **1896**, 63.

—— —— note on the $\alpha\alpha_1$-dimethylglutaric acids, T., 268; P., **1896**, 63.

Burgess, *Herbert E.* See *Alfred Chaston* **Chapman.**

Burrell, *B. Arthur*, analysis of the water of the dropping well at Knaresborough, Yorkshire, T., 536; P., **1896**, 73.

C.

Cain, *John Cannell*, note on the action of hydrogen chloride on ethylic alcohol, P., **1896**, 12.

Calvert, *Harry Thornton*, and *Thomas* **Ewan,** colloïdal chromosulphuric acid, P., **1896**, 160.

Cannizzaro, *Stanislao*, congratulatory address to, P., **1896**, 120.

Carr, *Francis Howard.* See *Wyndham Rowland* **Dunstan.**

Chapman, *Alfred Chaston* and *Herbert E.* **Burgess,** note on santal and some of its derivatives, P., **1896**, 140.

Chattaway, *Frederick D.*, and *Robert Cecil Turle* **Evans,** metadichlorobenzene, T., 848; P., **1896**, 97.

—— —— the diphenylbenzenes. I. Metadiphenylbenzene, T., 980; P. **1896**, 113.

Chikashigé, *Masumi*, the atomic weight of Japanese tellurium, T., 881; P., **1896**, 151.

Clowes, *Frank*, the evolution of carbon monoxide by alkaline pyrogallic solution during absorption of oxygen, P., **1895**, 200.

—— the composition of the limiting explosive mixtures of various combustible gases with air, P., **1895**, 201; discussion, *ibid.*, 201.

—— explosion and detection of acetylene in air, P., **1896**, 143.

Cohen, *Julius Berend*, and *William Henry* **Archdeacon,** the action of sodium alcoholate on the acid amides, T., 91; P., **1896**, 8.

Collie, *John Norman*, and *N. T. M.* **Wilsmore,** the production of naphthalene and of isoquinoline derivatives from dehydracetic acid, T., 293; P., **1896**, 47.

Cross, *Charles Frederick*, *Edward John* **Bevan,** and *Claud* **Smith,** constitution of the cereal celluloses, T., 804; P., **1896**, 95.

Cross, *Charles Frederick*, *Edward John* **Bevan,** and *Claud* **Smith,** carbohydrates of cereal straws, T., 1604; P., **1896**, 174.

D.

D'Arcy, *Ralph Francis*, on certain views concerning the condition of the dissolved substance in solutions of sodium sulphate, T., 993; P., **1896**, 104.

Davy, *S. W. M.*, obituary notice of, T., 733.

Dewar, *James*, the liquefaction of air, and research at low temperatures, P., **1895**, 221; discussion, *ibid.*, 231.

Divers, *Edward*, and *Tamemasa* **Haga,** the reduction of nitrososulphates, T., 1610; P., **1896**, 179.

—— —— imidosulphonates. Part II. T., 1620; P., **1896**, 179.

—— —— amidosulphonic acid, T., 1634; P., **1896**, 180.

—— —— the economical preparation of hydroxylamine sulphate, T., 1665; P., **1896**, 178.

Dixon, *Augustus Edward*, the chemistry of dibromopropylthiocarbimide and the action of bromine and iodine on allylthiourea, T., 17; P., **1895**, 215.

—— halogen additive products of substituted thiosinamines, T., 851; P., **1896**, 99.

—— acidic thiocarbimides, thioureas, and ureas, T., 855; P., **1896**, 100.

—— thiocarbimides derived from complex fatty acids, T., 1593; P., **1896**, 223.

Dixon, *Harold Baily*, the mode of formation of carbonic acid in the burning of carbon compounds, T., 774; P., **1896**, 55.

Dixon, *Harold Baily*, and *H. Brereton* **Baker,** the chemical inactivity of the Röntgen rays, T., 1308; P., **1896**, 160.

Dixon, *Harold Baily*, and *J. A.* **Harker,** on the detonation of chlorine peroxide, T., 789; P., **1896**, 57.

Dixon, *Harold Baily*, *E. H.* **Strange,** and *Edward* **Graham,** the explosion of cyanogen, T., 759; P., **1896**, 53.

Doherty, *W. M.*, apparatus for the detection of boric acid, P., **1896**, 101.

Doran, *Robert Elliot*, the action of lead thiocyanate on the chlorocarbonates. Part I. Carboxyethylthiocarbamide and its derivatives, T., 1324; P., **1896**, 74.

Dougal, *Margaret Douie*, the effect of heat on aqueous solutions of chrome alum, T., 1526; P., **1896**, 183.

Dunstan, *Wyndham Rowland,* and *Francis Howard* **Carr,** note on piperovatine, P., **1895,** 177.

—— —— dibenzaconine and tetracetylaconitine, P., **1895,** 187.

—— note on a difficulty in the determination of nitrogen by the absolute method, P., **1896,** 48.

Dunstan, *Wyndham Rowland,* and *Ernest* **Goulding,** the hydriodides of hydroxylamine, T., 839; P., **1896,** 72.

Dunstan, *Wyndham Rowland, Thomas* **Tickle,** and *David Hamilton* **Jackson,** the action of methylic alcohol on aconitine. Formation of methylbenzaconine, P., **1896,** 159.

Durrant, *Reginald D.,* on a new compound of cobalt, and a rapid method of detecting cobalt in presence of nickel, P., **1896,** 96.

E.

Easterfield, *Thomas Hill.* See *Thomas Barlow* **Wood.**

Elliot, *Walter John,* action of chloroform and potassium hydroxide on metamidobenzoic acid, T., 1513; P., **1896,** 171.

Evans, *Clara de Brereton,* researches on tertiary benzenoid amines. I. Derivatives of dimethylaniline, P., **1895,** 235.

Evans, *Robert Cecil Turle.* See *Frederick D.* **Chattaway.**

Ewan, *Thomas,* note on the electrolytic conductivity of formanilide and thioformanilide, T., 96; P., **1896,** 8.

Ewan, *Thomas.* See also *Harry Thornton* **Calvert.**

F.

Fenton, *Henry John Horstman,* the constitution of a new dibasic acid resulting from the oxidation of tartaric acid, T., 546; P., **1896,** 67.

Fitzgerald, *George Francis,* Helmholtz Memorial Lecture, T., 885; P., **1896,** 26; discussion, *ibid.,* 26.

Forster, *Martin Onslow,* studies of the terpenes and allied compounds. New derivatives of α-dibromocamphor, T., 36; P., **1895,** 207.

—— preliminary note on a new base derived from camphoroxime, P., **1896,** 145.

Fortey, *Emily C.* See *Arthur* **Richardson.**

Frankland, *Percy Faraday,* and *John* **MacGregor,** on some of the ethereal salts of active and inactive monobenzoyl-, dibenzoyl-, diphenylacetyl-, and dipropionyl-glyceric acids, T., 104; P., **1896,** 9.

Frankland, *Percy Faraday,* and *Robert Howson* **Pickard,** rotation of optically active compounds in organic solvents, T., 123; P., **1896,** 11.

Frankland, *Percy Faraday,* and *Frederick Malcolm* **Wharton,** position isomerism and optical activity. The methylic and ethylic salts of ortho-, meta-, and para-ditoluyltartaric acids, T., 1309; P., **1896,** 148.

—— —— position isomerism and optical activity. The comparative rotatory powers of the dibenzoyl-, and ditoluyltartrates, T., 1583; P., **1896,** 186.

G.

Galloway, *Robert,* obituary notice of, T., 733.

Gardner, *John Addyman.* See *James Ernest* **Marsh.**

Goodwin, *William.* See *William Henry* **Perkin,** jun.

Goulding, *Ernest.* See *Wyndham Rowland* **Dunstan.**

Graham, *Edward.* See *Harold Baily* **Dixon.**

Gunnell, *Oswald.* See *Arthur George* **Perkin.**

H.

Hada, *Seihachi,* how mercurous and mercuric salts change into each other, T., 1667; P., **1896,** 182.

Haga, *Tamemasa.* See *Edward* **Divers.**

Hake, *H. Wilson,* preliminary note on the absorption of moisture by deliquescent salts, P., **1896,** 33; discussion, *ibid.,* 35.

Harcourt, *Augustus George Vernon,* Presidential Address, T., 561; P., **1896,** 80.

Harker, *J. A.* See *Harold Baily* **Dixon.**

Hartley, *Walter Noel,* the determination of the composition of a "white sou" by a method of spectrographic analysis, T., 842; P., **1896,** 98.

—— on the temperature of certain flames, T., 844; P., **1896,** 98.

Haworth, *Edward,* and *William Henry* **Perkin,** jun., note on the preparation of glycol, T., 175; P., **1896,** 37.

Haworth, *Edward.* See also *William Henry* **Bentley.**

Heinke, *John Leathart,* and *William Henry* **Perkin,** jun., action of ethylic β-iodopropionate on the sodium derivative of ethylic isopropylmalonate, T., 1506; P., **1896,** 155.

Helmholtz, *Hermann Ludwig Ferdinand von,* memorial lecture on, T., 885; P., **1896,** 25.

Henderson, *George Gerald,* and *John M.* **Barr,** the action of certain acidic oxides on salts of the hydroxy acids. III., T., 1451; P., **1896,** 168.

Henderson, *James,* action of sugars on ammoniacal silver nitrate, T., 145; P., **1896,** 9.

Henderson, *James.* See also *James* **Walker.**

Hewitt, *John Theodore,* and *Frank G.* **Pope,** the condensation of chloral with resorcinol, T., 1265; P., **1896,** 150.

Hewitt, *John Theodore,* and *Henry E.* **Stevenson,** the three chlorobenzeneazosalicylic acids, T., 1257; P., **1896,** 149.

Hodgkinson, *William Richard Eaton,* fluorene and acenaphthene, P., **1896,** 110.

Hofmann, *August Wilhelm von,* memorial lectures on, T., 575, P., **1893,** 133.

Hooker, *Samuel C.,* the constitution of lapachol and its derivatives. Part III. The structures of the amylene chain, T., 1355: P., **1896,** 166.

—— lomatiol (hydroxyisolapachol), T., 1381; P., **1896,** 166.

Hummel, *John James.* See *Arthur George* **Perkin.**

Humphreys, *W. J.,* solution and diffusion of certain metals in mercury, T., 243, 1679; P., **1896,** 9, 220.

Hutchinson, *Arthur* and *William* **Pollard,** lead tetracetate and the plumbic salts, T., 212; P., **1896,** 30.

J.

Jackson, *David Hamilton.* See *Wyndham Rowland* **Dunstan.**

Jackson, *Herbert,* note on the use of certain phosphorescent substances in rendering X-rays visible; P., **1896,** 57; discussion, *ibid.,* 60.

Japp, *Francis Robert,* and *G. Druce* **Lander,** condensation of benzil with ethylic acetoacetate, T., 736; P., **1895,** 146.

—— —— synthesis of pentacarbon rings. Part I. Anhydracetonebenzil and its homologues, P., **1896,** 108.

Japp, *Francis Robert,* and *G. Druce* **Lander,** reduction of desyleneacetic acid, and the constitution of Zinin's pyroamaric acid, P., **1896,** 109.

—— —— synthesis of pentacarbon rings. Part II. Condensation of benzil with acetonedicarboxylic acid, P., **1896,** 109.

Japp, *Francis Robert,* and *Thomas Smith* **Murray,** synthesis of pentacarbon rings. Part III. Condensation of benzil with levulic acid, P., **1896,** 146.

Jones, *A. Wentworth,* molecular volume change during the formation of dilute solutions in organic liquids, P., **1895,** 179.

Jordan, *David Smiles.* See *William Arthur* **Bone.**

Jowett, *Hooper Albert Dickinson,* contributions to our knowledge of the aconite alkaloids. Part XIII. On atisine, the alkaloid of *Aconitum heterophyllum,* T., 1518; P., **1896,** 158.

K.

Kelvin, *William* **Thomson** (*Lord*), congratulatory address to, P., **1896,** 121.

Kipping, *Frederick Stanley,* ω-bromocamphoric acid, T., 61; P., **1895,** 212.

—— derivatives of camphoric acid, Part I, T., 913; P., **1895,** 33, 88, 210; **1896,** 114.

—— π-dibromocamphoric acid and its derivatives, P., **1895,** 211.

Kipping, *Frederick Stanley,* and *William J.* **Pope,** π-chlorocamphoric acid, P., **1895,** 213.

Kipping, *Frederick Stanley.* See also *Arthur* **Lapworth,** *Cecil* **Revis.**

L.

Lander, *G. Druce.* See *Francis Robert* **Japp.**

Lapworth, *Arthur,* note on the formation of camphorquinone from α-chloronitrocamphor, T., 322; P., **1896,** 76.

Lapworth, *Arthur,* and *Frederick Stanley* **Kipping,** isomeric π-bromo-α-nitro-camphors, T., 304; P., **1895,** 209; **1896,** 77.

—— —— derivatives of camphenesulphonic acids, T., 1546; P., **1895,** 57; **1896,** 152, 188.

Law, *Robert*, an auxiliary assay balance, T., 526; P., **1896**, 75.

Laycock, *William Frederick*, an examination of the products obtained by the dry distillation of bran with lime, P., **1896**, 38.

Lewes, *Vivian Byam*, the acetylene theory of luminosity, T., 226; P., **1896**, 1; discussion, *ibid.*, 3.

Loew, *Oscar*, the physiological action of amidosulphonic acid, T., 1662; P., **1896**, 182.

Luxmoore, *Charles Mann*, the oximes of benzaldehyde and their derivatives, T., 177; P., **1895**, 149.

M.

MacGregor, *John*. See *Percy Faraday* **Frankland.**

Mackenzie, *John Edwin*, dimethoxydiphenylmethane and some of its homologues, T., 985; P., **1896**, 117.

Maclaurin, *J. S.*, double sulphides of gold and other metals, or the action at a red heat of sulphur on gold when alloyed with other metals, T., 1269; P., **1896**, 149.

—— the relative weights of gold and silver dissolved by potassium cyanide solutions from alloys of these metals, T., 1276; P., **1896**, 149.

McLeod, *Herbert*, liberation of chlorine during the heating of a mixture of potassic chlorate and manganic peroxide, T., 1015; P., **1896**, 141.

M'Roberts, *George*, obituary notice of, T., 734.

Marchlewski, *Leo*. See *Edward* **Schunck.**

Marsh, *James Ernest*, and *John Addyman* **Gardner,** researches on the terpenes. VI. Products of the oxidation of camphene. Camphoic acid and its derivatives, T., 74; P., **1895**, 206; discussion, *ibid.*, 206.

Marshall, *B. Mervyn C.*, the rotation of aspartic acid, T., 1022; P., **1896**, 146.

Meldola, *Raphael*, mononitroguaiacol, P., **1896**, 125.

Meldola, *Raphael*, and *Ernest Robert* **Andrews,** the alkaline reduction of metanitraniline, T., 7; P., **1895**, 214.

Meldola, *Raphael*, and *Frederick William* **Streatfeild,** mixed diazoamides containing an ortho-nitro-group, P., **1896**, 49.

—— —— allylparadinitrodiazoamidobenzene: a study of the relations between melting point and constitution, P., **1896**, 51.

Meldola, *Raphael*, *George Harold* **Woolcott,** and *Edward* **Wray,** contributions to the chemistry of the phenol derivatives, T., 1321; P., **1896**, 163.

Meyer, *Julius Lothar*, memorial lecture on, T., 1403; P., **1896**, 119.

Murray, *Thomas Smith*. See *Francis Robert* **Japp.**

N.

Newth, *George S.*, an apparatus for showing experiments with ozone, T., 1298; P., **1896**, 139.

—— note on the action of hydrofluoric acid on crystallised silicon, P., **1895**, 176.

Nicholls, *A.* See *William Augustus* **Tilden.**

Nicol, *William Walker James*, the molecular volumes of organic substances in solution, T., 142; P., **1895**, 237.

O.

O'Sullivan, *Cornelius*, and *Arthur Landauer* **Stern,** the identity of dextrose from different sources, with special reference to the cupric oxide reducing power, T., 1691; P., **1896**, 218.

P.

Pasteur, *Louis*, telegram of condolence on the death of, P., **1895**, 167.

Paterson, *David*, efflorescence of double ferrous aluminium sulphate on bricks exposed to sulphur dioxide, T., 66; P., **1895**, 203.

Patterson, *Thomas Stewart*, iodoso- and iodoxy-benzaldehydes, T., 1002; P., **1896**, 153.

Perkin, *Arthur George*, luteolin. Part I. T., 206; P., **1896**, 37. Part II. T., 799; P., **1896**, 105.

—— acid compounds of natural colouring matters, T., 1439; P., **1896**, 167.

Perkin, *Arthur George*, and *Hermann* **Bablich,** morin. Part I. T., 792; P., **1896**, 106.

Perkin, *Arthur George*, and *Oswald* **Gunnell,** the colouring matter of *Querbracho Colorado*, T., 1303; P., **1896**, 158.

Perkin, *Arthur George*, and *John James* **Hummel,** the colouring prin.

ciple contained in the bark of *Myrica nagi*, T., 1287; P., **1896**, 145.

Perkin, *Arthur George*, and *John James* **Hummel**, occurrence of quercetin in the outer skins of the bulb of the onion, T., 1295; P., **1896**, 144.

—— —— the colouring matters occurring in British plants, T., 1566; P., **1896**, 185.

Perkin, *Arthur George*, and *George* **Young**, colouring matter of Sicilian sumach, *Rhus coriaria*, T., 1299; P., **1896**, 157.

Perkin, *William Henry, sen.*, the influence of temperature on refractive power and on the refraction equivalents of acetylacetone and of ortho- and para-toluidine, T., 1; P., **1895**, 199.

—— Hofmann Memorial Lecture: the origin of the coal-tar industry and the contributions of Hofmann and his pupils, T., 596; P., **1893**, 137.

—— on magnetic rotatory power, especially of aromatic compounds, T., 1025; P., **1896**, 122.

Perkin, *William Henry, jun.* (and in part *William* **Goodwin** and *Jocelyn Field* **Thorpe**), some derivatives of propionic acid, of acrylic acid, and of glutaric acid, T., 1457; P., **1896**, 154, 170.

Perkin, *William Henry, jun.*, and *Jocelyn Field* **Thorpe**, the condensation of halogen derivatives of fatty ethereal salts with ketones and ketonic acids, P., **1896**, 155.

Perkin, *William Henry, jun.* See also *William Arthur* **Bone**, *William Henry* **Bentley**, *Edward* **Haworth**, and *John Leathart* **Heinke**.

Pickard, *Robert Howson*. See *Percy Faraday* **Frankland**.

Playfair, *Lord*, Hofmann memorial lecture. Personal reminiscences of Hofmann, and of the conditions which led to the establishment of the Royal College of Chemistry, and his appointment as its professor, T., 575; P., **1893**, 133.

Pochin, *Henry Davis*, obituary notice of, T., 735.

Pollard, *William*. See *Arthur* **Hutchinson**.

Pope, *Frank G.* See *John Theodore* **Hewitt**.

Pope, *William Jackson*, substances exhibiting circular polarisation both in the amorphous and crystalline states, T., 971; P., **1896**, 116.

—— the refraction constants of crystalline salts, T., 1530; P., **1896**, 177.

Pope, *William Jackson*, polymorphism as an explanation of the thermochemical peculiarities of chloral and bromal hydrates, P., **1896**, 142.

—— a compound of camphoric acid with acetone, T., 1696; P., **1896**, 217.

Pope, *William Jackson*. See also *Frederick Stanley* **Kipping**.

Proude, *James*, and *William Henry* **Wood**, experiments on the formation of the so-called ammonium amalgam, P., **1895**, 236.

Purdie, *Thomas*, and *Sidney* **Williamson**, ethereal salts of optically active malic and lactic acids, T., 818; P., **1896**, 96.

R.

Revis, *Cecil*, and *Frederick Stanley* **Kipping**, derivatives of α-hydrindone, P., **1895**, 214.

—— —— bromocamphor, P., **1896**, 77.

Richardson, *Arthur*, and *Emily C.* **Fortey**, action of light on amyl alcohol, T., 1349; P., **1896**, 164.

—— —— note on the action of light on ether, T., 1352; P., **1896**, 165.

Roberts-Austen, *William Chandler*, note on Mr. W. J. Humphreys' paper on the solution and diffusion of certain metals in mercury. P., **1896**, 219.

Ruhemann, *Siegfried*, formation of pyrazolone derivatives from chlorofumaric acid, T., 1394; P., **1896**, 166.

Ruhemann, *Siegfried*, and *E. A.* **Tyler**, contributions to the knowledge of ethylic acetoacetate. Part I. Acetonylmalic acid, T., 530; P., **1896**, 73.

Ruhemann, *Siegfried*, and *C. G. L.* **Wolf**, contributions to the knowledge of the β-ketonic acids, T., 1383; P., **1896**, 166.

S.

Sakurai, *Jōji*, the molecular conductivity of amidosulphonic acid, T., 1654; P., **1896**, 181.

—— constitution of glycocine, P., **1896**, 38.

Schunck, *Edward*, and *Leo* **Marchlewski**, some derivatives of anthraquinone, T., 68; P., **1895**, 202.

Sell, *William James*, studies on citrazinic acid. Part IV. T., 1447; P., **1896**, 168.

Shaw, *George Elliott*, periodides of theobromine, T., 102; P., **1895**, 177.

Smith, *Claud.* See *Charles Frederick* **Cross.**

Snape, *Henry Lloyd,* on certain phenylthiocarbamates, T., 98; P., **1896,** 12.

Spivey, *W. T. Newton.* See *Thomas Barlow* **Wood.**

Stephens, *F. R.* See *William Henry* **Symons.**

Stern, *Arthur Landauer.* See *Cornelius* **O'Sullivan.**

Stevenson, *Henry E.* See *John Theodore* **Hewitt.**

Strange, *E. H.* See *Harold Baily* **Dixon.**

Streatfeild, *Frederick William.* See *Raphael* **Meldola.**

Symons, *William Henry,* and *F. R.* **Stephens,** carbon dioxide: its volumetric determination, T., 869; P., **1896,** 103.

T.

Thomas, *G. L.,* and *Sydney* **Young,** normal hexane from light petroleum (petroleum ether), P., **1895,** 173.

Thorpe, *Jocelyn Field.* See *William Henry* **Bentley,** *William Henry* **Perkin,** *jun.*

Tickle, *Thomas.* See *Wyndham Rowland* **Dunstan.**

Tilden, *William Augustus,* the action of bromine on pinene with reference to the question of its constitution, T., 1009; P., **1896,** 137.

Tilden, *William Augustus,* and *Robert E.* **Barnett,** the molecular weight and formula of phosphoric anhydride and of metaphosphoric acid, T., 154; P., **1896,** 30, discussion, *ibid.,* 30.

Tilden, *William Augustus,* and *A.* **Nicholls,** preliminary note on some product from pinene tetrabromide, P., **1896,** 138.

Tutton, *Alfred Edwin,* connection between the atomic weight of contained metals and the crystallographical characters of isomorphous salts. The volume and optical relationships of the potassium, rubidium, and cæsium salts of the monoclinic series of double sulphates,

$$R_2M(SO_4)_2,6H_2O,$$

T., 344; P., **1896,** 68.

—— comparison of the results of the investigations of the simple and double sulphates containing potassium, rubidium, and cæsium, and general deductions therefrom concerning the influence of atomic weight on crystal character, T., 495; P., **1896,** 71.

Tutton, *Alfred Edwin,* the bearing of the results of the investigations of simple and double sulphates containing potassium, rubidium, and cæsium on the nature of the structural unit, T., 507; P., **1896,** 71.

Tyler, *E. A.* See *Siegfried* **Ruhemann.**

V.

Vernon Harcourt. See **Harcourt.**

W.

Walker, *James,* and *James R.* **Appleyard,** transformations of the alkyl ammonium cyanates into the corresponding ureas, T., 193; P., **1896,** 12.

—— —— absorption of dilute acids by silk, T., 1334; P., **1896,** 147.

Walker, *James,* and *James* **Henderson,** electrolysis of potassium alloethylic camphorate. Part II, T., 748; P., **1896,** 110.

Walker, *James Wallace,* electrolysis of the salts of monhydroxy-acids, T., 1278; P., **1896,** 157.

—— action of formaldehyde on phenylhydrazine and on some hydrazines, T., 1280; P., **1896,** 157.

Wharton, *Frederick Malcolm.* See *Percy Faraday* **Frankland.**

Willcox, *W. H.,* note on the estimation of butyric acid, P., **1895,** 202.

Williamson, *Sidney.* See *Thomas* **Purdie.**

Wilsmore, *N. T. M.* See *John Norman* **Collie.**

Wolf, *C. G. L.* See *Siegfried* **Ruhemann.**

Wood, *Thomas Barlow,* available potash and phosphoric acid in soils, T., 287; P., **1896,** 13.

Wood, *Thomas Barlow, W. T. Newton* **Spivey,** and *Thomas Hill* **Easterfield,** charas, the resin of Indian hemp, T., 539; P., **1896,** 76.

Wood, *William Henry.* See *James* **Proude.**

Woolcott, *George Harold.* See *Raphael* **Meldola.**

Wray, *Edward.* See *Raphael* **Meldola.**

Wynne, *William Palmer.* See *Henry Edward* **Armstrong.**

Y.

Young, *George.* See *Arthur George* **Perkin.**

Young, *Sydney.* See *G. L.* **Thomas.**

INDEX OF SUBJECTS.

TRANSACTIONS. 1896.

(Marked T.); and to Proceedings of the Session 1895—1896, Nos. 155 to 168, Nov., 1895—June, 1896 (marked P.).

INDEXERS.

J. Bruce.
A. W. Crossley, M.Sc., Ph.D.
T. Ewan, B.Sc., Ph.D.
M. O. Forster, Ph.D.
J. S. Haldane, M.A., M.D.
H. A. D. Jowett, D.Sc.
P. A. E. Richards.
L. J. Spencer, M.A.
J. F. Thorpe, Ph.D.

A.

Acenaphthene, magnetic rotatory power, &c., of (Perkin), T., 1088, 1089, 1197, 1242.
oxidation of (Hodgkinson), P., **1896**, 110.
Acetaldehyde, formation of, from ether by action of light (Richardson and Fortey), T., 1355; P., **1896**, 166.
α-Acetamido-π-bromocamphor (Lapworth and Kipping), T., 317.
o-Acetamidophenol and its acetyl derivative (Meldola, Woolcott, and Wray), T., 1323.
2 : 4-bromonitro- (Meldola, Woolcott, and Wray), T., 1326; P., **1896**, 163.
anhydride (Meldola, Woolcott, and Wray), T., 1327; P., **1896**, 164.
5-nitro-, acetyl derivative of (Meldola, Woolcott, and Wray), T., 1325; P., **1896**, 163.
Acetanilide, constitution of (Cohen and Archdeacon), T., 96.
magnetic rotatory power, &c., of (Perkin), T., 1114, 1216, 1246.
action of sulphur on (Hofmann Lecture), T., 713.
use of, in preparing aniline derivatives (Hofmann Lecture), T., 695.
sodium ethoxide (Cohen and Archdeacon), T., 93.
Acetanilide sodium methoxide, preparation of (Cohen and Archdeacon), T., 91; P., **1896**, 8.
action of benzoic chloride on (Cohen and Archdeacon), T., 92.
Acetanilide, *p*-chlor- (Chattaway and Evans), T., 849; P., **1896**, 97.
*o-p-di*chlor-, and its hypochlorite (Chattaway and Evans), T., 849, 850; P., **1896**, 97.
Acet-*o*-anisidide, 4-nitro- (Meldola, Woolcott, and Wray), T., 1330; P., **1896**, 164.
5-nitro- (Meldola, Woolcott, and Wray), T., 1331; P., **1896**, 164.
Acetethylanilamide, action of sodium methoxide and ethoxide on (Cohen and Archdeacon), T., 95; P., **1896**, 8.
Acetic acid, formation of, from ether by action of light (Richardson and Fortey), T., 1355; P., **1896**, 166.
magnetic rotatory power of (Perkin), T., 1251.
absorption by silk of dilute (Walker and Appleyard), T., 1346; P., **1896**, 147.
Acetic acid: lead tetracetate, history and preparation of (Hutchinson and Pollard), T., 212, 213; P., **1896**, 31.

Acetic acid,
lead tetracetate, crystallography of (HUTCHINSON and POLLARD), T., 215; P., **1896**, 31.
action of glacial acetic acid on (HUTCHINSON and POLLARD), T., 214.
action of halogen acids on (HUTCHINSON and POLLARD), T., 218, 219, 220; P., **1896**, 31.
action of hydrogen sulphide on (HUTCHINSON and POLLARD), T., 220.
action of orthophosphoric acid on (HUTCHINSON and POLLARD), T., 221; P., **1896**, 31.
action of sulphuric acid on (HUTCHINSON and POLLARD), T., 221.
action of water on (HUTCHINSON and POLLARD), T., 214, 218; P., **1896**, 31.
Acetic acid, *o*-acetamidophenylic salt, and its hydrate and 5-nitro-derivative (MELDOLA, WOOLCOTT, and WRAY), T., 1323; P., **1896**, 163.
acetoguaiacolamide salt, nitro- (MELDOLA, WOOLCOTT, and WRAY), T., 1331; P., **1896**, 164.
amylic salt, molecular volume of, in organic solvents (NICOL), T., 143; P., **1895**, 237.
anthraflavic acid salt (HOFMANN LECTURE), T., 633.
benzaldehyde, *m*-iodoso-, salt (PATTERSON), T., 1004; P., **1896**, 153.
benz-*anti*-aldoxime salt (LUX-MOORE), T., 188.
butylic salt, molecular volume of, in organic solvents (NICOL), T., 143; P., **1895**, 237.
guaiacol salt (MELDOLA), P., **1896**, 126.
nitro- (MELDOLA), P., **1896**, 126.
iso-β-lapachol salt (HOOKER), T., 1364.
α-lapachone salt (HOOKER), T., 1371, 1372.
methylic salt, molecular volume of the, in organic solvents (NICOL), T., 143; P., **1895**, 237.
4-chloro-3-nitrophenol salt (MELDOLA, WOOLCOTT, and WRAY), T., 1323; P., **1896**, 163.
2-chloro-4-nitrophenol salt of (MELDOLA, WOOLCOTT, and WRAY), T., 1328; P., **1896**, 164.
phenylic salt, magnetic rotatory power, &c., of (PERKIN), T., 1064, 1075, 1076, 1179, 1238.
Acetic acid, chloro-derivatives of, magnetic rotatory power and relative density of (PERKIN), T., 1063, 1172, 1236.
Acetic acid, *tri*chlor-, magnetic rotatory power and relative density of (PERKIN), T., 1063, 1172, 1236.
Acetoacetic acid, ethylic salt, magnetic rotatory power and relative density of (PERKIN), T., 1063, 1172, 1236.
volatility of its copper compound (JAPP and LANDER), T., 737.
action of ethylic chlorofumarate and ethylic chloromaleate on (RUHEMANN and TYLER), T., 532; P., **1896**, 73.
and ethylic α-brom*iso*butyrate, action of zinc on (PERKIN and THORPE), P., **1896**, 156.
condensation of, with benzil (JAPP and LANDER), T., 736; P., **1895**, 146.
condensation of, with α-chlorocrotonic acid (RUHEMANN and WOLFF), T., 1391; P., **1896**, 166.
sodio-, ethylic salt, action of ethylic β-iodopropionate on (BENTLEY and PERKIN), T., 1511.
Acetodiphenylamide, action of sodium methoxide and ethoxide on (COHEN and ARCHDEACON), T., 94; P., **1896**, 8.
Acetoguaiacolamide, nitro- [OH : OMe : NO_2 : NHAc = 1 : 2 : 4 : 6] (MELDOLA, WOOLCOTT, and WRAY), T., 1331; P., **1896**, 164.
Aceto-α-naphthylamide sodium ethoxide (COHEN and ARCHDEACON), T., 93; P., **1896**, 8.
Aceto-β-naphthylamide sodium ethoxide (COHEN and ARCHDEACON), T., 93; P., **1896**, 8.
Aceto-α-naphthylamide sodium methoxide (COHEN and ARCHDEACON), T., 93; P., **1896**, 8.
Acetone, action of ethylic α-bromopropionate on (PERKIN and THORPE), T., 1482; P., **1896**, 156.
Acetonedicarboxylic acid, condensation of, with benzil (JAPP and LANDER), P., **1896**, 109.
Acetonylmalic acid, barium, silver, and phenylhydrazine salts (RUHEMANN and TYLER), T., 534; P., **1896**, 74.
Acetophenone, magnetic rotatory power, &c., of (PERKIN), T., 1064, 1091, 1092, 1200, 1243.
Acetophenonehydrazone, action of formaldehyde on (WALKER), T., 1286.
Acetophenylthiocarbamide, action of acetic chloride on (DORAN), T., 343.

Acetophenylthiocarbamide, action of ethylic chlorocarbonate on (Doran), T., 343.
Aceto-*o*-toluidide sodium ethoxide (Cohen and Archdeacon), T., 93; P., **1896**, 8.
sodium methoxide (Cohen and Archdeacon), T., 93; P., **1896**, 8.
Aceto-*p*-toluidide sodium ethoxide (Cohen and Archdeacon), T., 93; P., **1896**, 8.
sodium methoxide (Cohen and Archdeacon), T., 93; P., **1896**, 8.
w-Acetoxy*cis*-π-camphanic acid (Kipping), T., 949; P., **1896**, 115.
π-Acetoxycamphoric anhydride (Kipping), T., 940; P., **1896**, 115.
Acetylacetone, refraction equivalents of, at different temperatures (Perkin), P., **1895**, 199; T., 2.
Acetyl-π-bromo-*a*-*iso*nitrocamphor (Lapworth and Kipping), T., 320.
γ-Acetylbutyric acid (Bentley and Perkin), T., 1511.
action of nitric acid on (Bentley and Perkin), T., 1512; P., **1896**, 169.
oxime of (Bentley and Perkin), T., 1512; P., **1896**, 169.
semicarbazone of (Bentley and Perkin), T., 1513; P., **1896**, 169.
Acetylcannabinol (Wood, Spivey, and Easterfield), T., 545; P., **1896**, 76.
2-Acetyl-1 : 1′-dihydroxy-3 : 3′-dimethylnaphthalene, behaviour of, towards sulphuric acid (Collie and Wilsmore), T., 298; P., **1896**, 47.
Acetylene, synthesis from carbon and hydrogen of (Bone and Jordan), P., **1896**, 62.
luminosity of hydrocarbon flames due to (Lewes), T., 226; P., **1896**, 1.
explosive mixtures of air and (Clowes), P., **1896**, 143.
estimation of, in air (Clowes), P., **1896**, 144.
Acetylglutaric acid, ethylic salt, and hydrolysis of (Bentley and Perkin), T., 1511; P., **1896**, 169.
Acetyl-*d*-lactic acid, rotatory power of the ethylic salt of (Purdie and Williamson), T., 828; P., **1896**, 97.
Acetylluteolin triethyl ether (Perkin), T., 801; P., **1896**, 105.
Acetylmalic acid, methylic salt, specific rotation of (Purdie and Williamson), T., 824; P., **1896**, 97.
Acetylmorin tetrametyl ether (Perkin and Bablich), T., 797; P., **1896**, 106.
Acetylphenylmalic acid and its salts (Ruhemann and Wolff), T., 1385; P., **1896**, 166.
β-Acetylpropionic acid. See Levulinic acid.
Acetyl*iso*rhamnetin (Perkin and Hummel), T., 1569; P., **1896**, 186.
Acid $C_8H_7NO_3$, obtained by the action of chloroform and potash on *m*-aminobenzoic acid, and its barium salt (Elliott), T., 1515; P., **1896**, 171.
$C_9H_{14}O_3$, from potassium *allo*ethylic camphorate: its phenylhydrazone (Walker and Henderson), T., 755; P., **1896**, 110.
$C_{10}H_{16}O_3$, from *a*-bromocampholide, barium salt (Forster), T., 51.
$C_{10}H_{16}O_3$, from oxidation of hydrocarbon arising from pinene tetrabromide (Tilden and Nicholls), P., **1896**, 139.
$C_{10}H_{16}O_4$, from dibromocampholide: its barium salt, *di*bromo-derivative (Forster), T., 44; P., **1895**, 208.
$C_{10}H_{16}O_6$, from bromocamphorenic acid, and its silver salt (Forster), T., 49; P., **1895**, 208.
$C_{10}H_{18}O_3$, from campholide: its barium salt (Forster), T., 57; P., **1895**, 209.
Aconine, acetyl and benzoyl derivatives of (Dunstan and Carr), P., **1895**, 178.
Aconitic acid, occurrence of, in *Aconitum heterophyllum* (Jowett), T., 1521; P., **1896**, 158.
Aconitine, action of methylic alcohol on (Dunstan, Tickle, and Jackson), P., **1896**, 159.
estimation of nitrogen in, by the absolute method (Dunstan and Carr), P., **1896**, 48.
Aconitum heterophyllum, atisine, the alkaloid of, and aconitic acid in (Jowett), T., 1518; P., **1896**, 158.
Acraldehyde, preparation of (Hofmann Lecture), T., 697.
Acrylic acid, preparation of (Hofmann Lecture), T., 697.
Address, congratulatory, to the Institute of France, P., **1895**, 167; reply thereto, P., **1895**, 199.
to Lord Kelvin, P., **1896**, 121.
to Professor Stannizzaro, P., **1896**, 120.
of condolence on the death of Louis Pasteur, P., **1895**, 197.
presidential, of A. W. Vernon Harcourt, T., 563; P., 80.
Alcohol-radicles, nature of (Hofmann Lecture), T., 696.

Alcohol-radicles, haloïds of, use of, as agents of substitution (HOFMANN LECTURE), T., 659.
Aldehydocitrazinic acid, its oxime and phenylhydrazine derivative (SELL), T., 1449; P., **1896**, 168.
Alizarin, formation of, from anthracene (HOFMANN LECTURE), T., 627.
brom-, formation of (HOFMANN LECTURE), T., 633.
β-nitro-, preparation of (HOFMANN LECTURE), T., 633.
Alizarin-yellows, A and C, non-formation of acid compounds of (PERKIN), T., 1440; P., **1896**, 167.
Alkaloids, constitution of (HOFMANN LECTURE), T., 650, 651.
acid solutions of, action of light on (RICHARDSON), and FORTEY), T., 1349.
Allium cepa, occurrence of quercetin in outer skins of bulb of (PERKIN and HUMMEL), T., 1295; P., **1896**, 144.
Allophanic acid, thio-, ethylic salt, probable non-existence of (DORAN), T., 339, 344; P., **1896**, 75.
Allylbenzene, magnetic rotatory power, &c., of (PERKIN), T., 1084, 1126, 1143, 1149, 1224, 1246.
Allyl-*p*-dinitrodiazoamidobenzene (MELDOLA and STREATFEILD), P., **1896**, 51.
Allylic alcohol, preparation and properties of (HOFMANN LECTURE), T., 697.
bromide, preparation of (HOFMANN LECTURE), T., 697.
chloride, preparation of (HOFMANN LECTURE), T., 697.
iodide, preparation of (HOFMANN LECTURE), T., 697.
sulphide, preparation of (HOFMANN LECTURE), T., 697.
Allylthiocarbimide, synthesis of (HOFMANN LECTURE), T., 697.
action of bromine on (DIXON), T., 17.
action of iodine and iodine monobromide on (DIXON), T., 26.
Allylthiocarbimide, *a*-chlor- and *a*-brom-, action of ammonia on (DIXON), T., 25.
Allythiourea, action of bromine on (DIXON), T., 18, 19; P., **1895**, 215.
action of iodine on (DIXON), T., 25; P., **1895**, 216.
Allyltoluidine, preparation of (HOFMANN LECTURE), T., 604.
Aluminium, solution and diffusion of, in mercury (HUMPHREYS), T., 1679; P., **1896**, 220.
Aluminium ferrous sulphate, occurrence of, on bricks exposed to sulphurous anhydride (PATERSON), T., 66; P., **1895**, 203.
Amides, action of bromine on (HOFMANN LECTURE), T., 719.
Amides, thio-, preparation of (HOFMANN LECTURE), T., 710.
Amine $C_{14}H_{14}Br_2N_2O_2$, obtained in the preparation of *p*-brom-*o*-anisidine (MELDOLA, WOOLCOTT, and WRAY), T., 1329.
Amines, action of bromine on (HOFMANN LECTURE), T., 720.
action of carbon bisulphide on (HOFMANN LECTURE), T., 663.
separation of (HOFMANN LECTURE), T., 662.
Amines, secondary and tertiary, preparation of (HOFMANN LECTURE), T., 655.
Amino-group, influence on the strength of acids of the (SAKURAI), T., 1659; P., **1896**, 181.
Ammonia, action of iodine on (CHATTAWAY), T., 1577; P., **1896**, 173.
Ammonium compounds, constitution of (HOFMANN LECTURE), T., 667.
Ammonium amalgam (PROUDE and WOOD), P., **1895**, 236.
antimoniomalate (HENDERSON and BARR), T., 1452; P., **1896**, 168.
antimoniomucate (HENDERSON and BARR), T., 1453; P., **1896**, 168.
imidosulphonates (DIVERS and HAGA), T., 1621; P., **1896**, 179.
barium imidosulphonates (DIVERS and HAGA), T., 1622.
mercury imidosulphonate (DIVERS and HAGA), T., 1629.
iso-Amylcarbamine, preparation of (HOFMANN LECTURE), T., 709.
Amylic alcohol, action of light on (RICHARDSON and FORTEY), T., 1349; P., **1896**, 164.
β-*iso*-Amylnaphthalene (HOOKER), T., 1356, 1358.
p-Anethoil, magnetic rotatory power, &c., of (PERKIN), T., 1148, 1226, 1247.
Anhydroacetonedibenzil, reduction of (JAPP and LANDER), T., 745.
Anhydrocamphoic acid (MARSH and GARDNER), T., 76; P., **1895**, 206.
Anhydrodibenzylacetoacetic acid, ethylic salt of (JAPP and LANDER), T., 737; P., **1895**, 146.
Anhydrodihydroxyhydrolapachol, synthesis of (HOOKER), T., 1370, 1378.
Aniline, discovery of (HOFMANN LECTURE), T., 597.
preparation of (HOFMANN LECTURE), T., 642.

Aniline, composition of (Hofmann Lecture), T., 641.
magnetic rotatory power, &c., of (Perkin, T., 1064, 1098, 1155, 1207, 1244.
action of cyanic acid on (Hofmann Lecture), T., 648.
action of cyanogen on (Hofmann Lecture), T., 590, 649.
action of cyanogen haloids on (Hofmann Lecture)), T., 590.
action of cyanogen chloride on (Hofmann Lecture), T., 649, 650.
action of, on mercurous iodide (François), A., i, 22.
action of phosgene gas on (Hofmann Lecture), T., 649.
chlorination of (Hofmann Lecture), T., 644.
Aniline and its salts, constitution of (Hofmann Lecture), T., 655.
compounds of phosphoric acid with (Hofmann Lecture), T., 590.
hydrochloride, magnetic rotatory power, &c., of (Perkin), T., 1111, 1159, 1218, 1235, 1246.
Aniline, substitution products of, constitution of (Hofmann Lecture), T., 661.
substitution of chlorine and bromine in (Hofmann Lecture), T., 645.
Aniline, bromo-derivatives of, basic character of (Hofmann Lecture), T., 646.
p-brom-, action of ethylic bromide on (Hofmann Lecture), T., 661.
m-chlor, magnetic rotatory power, &c., of (Perkin), T., 1106, 1131, 1205, 1244.
p-chlor-, preparation of (Hofmann Lecture), T., 645; (Löb), A., i, 605.
magnetic rotatory power, &c., of (Perkin), T., 1106, 1131, 1205, 1244.
action of ethylic bromide on (Hofmann Lecture), T., 661.
di-chlor-, preparation of (Hofmann Lecture), T., 645.
o-p-dichlor-, preparation of (Chattaway and Evans), T., 850; P., **1896**, 98.
2 : 4 : 6-*tri*chlor, preparation of (Hofmann Lecture), T., 644.
p-iodo-, preparation of (Hofmann Lecture), T., 649.
m-nitro-, preparation of (Hofmann Lecture), T., 646, 647.
alkaline reduction of (Meldola and Andrews), T., 7; P., **1895**, 214.
Aniline, *m*-nitro-, action of ethylic bromide on (Hofmann Lecture), T., 661.
Anisaldehyde, magnetic rotatory power &c., of (Perkin), T., 1128, 1136, 1200, 1242.
Anisic acid, magnetic rotatory, &c, of the ethylic salt of (Perkin), T., 1128, 1136, 1160, 1176, 1231.
Anisic alcohol, magnetic rotatory power and relative density of (Perkin), T., 1128, 1136, 1199, 1242.
o-Anisidine, magnetic rotatory power, &c., of (Perkin), T., 1131, 1211, 1245.
p-brom- (Meldola, Woolcott, and Wray), T., 1329.
2 : 4-bromonitro- (Meldola, Woolcott, and Wray), T., 1327; P., **1896**, 164.
o-Anisidine, *p*-nitro-, and its acetyl derivative (Meldola, Woolcott, and Wray), T., 1329; P., **1896**, 164.
5-nitro-, and its acetyl derivative (Meldola, Woolcott, and Wray), T., 1330; P., **1896**, 164.
p-Anisidine, magnetic rotatory power, &c., of (Perkin), T., 1131, 1211, 1245.
Anisoil (phenyl methyl oxide), magnetic rotatory power, &c., of (Perkin), T., 1080, 1081, 1090, 1127, 1186, 1240.
4-bromo-2-nitro- (Meldola, Woolcott, and Wray), T., 1329.
2 : 4-*di*nitro- preparation of (Meldola, Woolcott, and Wray), T., 1330.
Anisoldisulphonic acid, preparation of (Hofmann Lecture), T., 697.
Annual General Meeting, T., 563; P., **1896**, 80.
Anthracene, discovery of (Hofmann Lecture), T., 598.
distillation of (Hofmann Lecture), T., 630.
Anthracene, brom-, preparation of (Hofmann Lecture), T., 601; P., **1893**, 138.
*di*brom- (Hofmann Lecture), T., 633.
chlor-, preparation of (Hofmann Lecture), T., 601; P., **1893**, 138.
*di*chlor-, action of sulphuric acid on (Hofmann Lecture), T., 631.
Anthracenedisulphonic acid, *di*chlor-, preparation of (Hofmann Lecture), T., 631.
Anthracenesulphonic acid, *di*chlor-, preparation of (Hofmann Lecture), T., 632.
Anthraflavic acid, composition of, and its diacetyl and dibenzoyl derivatives (Hofmann Lecture), T., 633.
iso-Anthraflavic acid, discovery of (Hofmann Lecture), T., 633.

Anthrapurpuramide, preparation of (Hofmann Lecture), T., 633.
Anthrapurpurin, formation and composition of (Hofmann Lecture), T., 633.
Anthraquinone, discovery of (Hofmann Lecture), T., 601; P., **1893**, 137.
*di*bromo-derivatives of (Hofmann Lecture), T., 633.
Anthraquinone group of natural yellow colouring matters (Perkin), T., 1441; P., **1896**, 167.
Anthraquinonedisulphonic acid, preparation of (Hofmann Lecture), T., 631.
Anthraquinoneoxime, methyl, ethyl, and benzyl ethers (Schunck and Marchlewski), T., 73; P., **1895**, 203.
Anthraquinonesulphonic acid, formation of (Hofmann Lecture), T., 629.
Antimoniomalic acid, ammonium salt of (Henderson and Barr), T., 1452; P., **1896**, 168.
Antimoniomucic acid, salts of (Henderson and Barr), T., 1453; P., **1896**, 168.
Antimony, solution and diffusion in mercury of (Humphreys), T., 1679; P., **1896**, 220.
Antimony pentachloride, action of, on carbon bisulphide (Hofmann Lecture), T., 700.
Triethylstibine, discovery of (Hofmann Lecture), T., 671.
Arlocarpus integrifolia, colouring matters of (Perkin and Bablich), T., 792; P., **1896**, 106; (Perkin), T., 1440; P., **1896**, 167.
Aspartic acid, rotatory power of (Marshall), T., 1022; P., **1896**, 146.
Assimilation, distinction between elaboration and (Cross, Bevan, and Smith), T., 1605; P., **1896**, 174.
Atisine, extraction of, from the root of *Aconitum heterophyllum* and its purification (Jowett), T., 1519; P., **1896**, 158.
properties and salts of (Jowett), T., 1521; P., **1896**, 158.
action of alkalis and acids on (Jowett), T., 1525; P., **1896**, 159.
Atmospheric air, liquefaction of (Dewar), P., **1895**, 221; (Blount), P., **1895**, 232.
Atomic weight or weights of the elements (L. Meyer), (Bedson), T., 1423; P., **1896**, 119.
Atomic weight of Japanese tellurium (Chikashigé), T., 881; P., **1896**, 151.
Atoms, analogy of, with vortex rings (Fitzgerald), T., 889; P., **1896**, 25.
Atoms, forces acting between (Fitzgerald), T., 901.
Azobenzene, *di-m*-amino-, bisazimide, diacetyl and dibenzoyl derivatives, oxalate, azo-β-naphthol derivative (Meldola and Andrews), T., 10; P., **1895**, 215.
di-m-amino-, behaviour of, towards *p*-nitrodiazobenzene chloride (Meldola and Andrews), T., 13.
*di*iodo-, from di-*m*-aminoazobenzene (Meldola and Andrews), T., 13; P., **1895**, 215.
Azonaphthalene, amino-, discovery of (Hofmann Lecture), T., 603; P., **1893**, 138.
Azotrinaphthyldiamine, preparation of (Hofmann Lecture), T., 621.
Azoxybenzene, *di-m*-amino-, dihydrochloride, diacetyl derivative, bisazimide, azo-β-naphthol derivative (Meldola and Andrews), T., 7; P., **1895**, 215.
*di*iodo-, from *di-m*-aminoazoxy-benzene (Meldola and Andrews), T., 10; P., **1895**, 215.

B.

Balance, an auxiliary assay (Law), T., 526; P., **1896**, 75.
Balance-sheet of the Chemical Society, March 21st, 1896, T., 572.
Balance-sheet of the Research Fund, March 21st, 1896, T., 573.
Barium imidosulphonates (Divers and Haga), T., 1622; P., **1896**, 179.
tungstitartrate (Henderson and Barr), T., 1457; P., **1896**, 169.
Barley, yield of, from different soils (Wood), T., 288; P., **1896**, 13.
straw, carbohydrates of (Cross, Bevan, and Smith), T., 1604; P., **1896**, 174.
Base, $C_{12}H_{19}N$, from camphoroxime and its salts (Forster), P., **1896**, 146.
Benzaldehyde, magnetic rotatory power, &c., of (Perkin), T., 1064, 1091, 1125, 1199, 1242.
from the electrolysis of potassium mandelate (Walker), T., 1279.
o-iodo-, and its dichloride (Patterson), T., 1006; P., **1896**, 153.
m-iodo-, and its dichloride (Patterson), T., 1002; P., **1896**, 153.
p-iodo-, and its dichloride (Patterson), T., 1005; P., **1896**, 153.
o-iodoso- (Patterson), T., 1007; P., **1896**, 153.
m-iodoso (Patterson), T., 1003; P., **1896**, 153.

Benzaldehyde, *p*-iodoso- (PATTERSON), T., 1005; P., **1896**, 153.
m-iodoxy- (PATTERSON), T., 1004; P., **1896**, 153.
p-iodoxy- (PATTERSON), T., 1005; P., **1896**, 153.
Benzaldehydephenylhydrazone (WALKER), T., 1279.
action of formaldehyde on (WALKER), T., 1285.
o-iodo- (PATTERSON), T., 1008; P., **1896**, 153.
m-iodo- (PATTERSON), T., 1009; P., **1896**, 153.
p-iodo- (PATTERSON), T., 1009; P., **1896**, 153.
Benz*anti*aldoxime and its hydrochloride (LUXMOORE), T., 177; P., **1895**, 149.
action of phosphorus trichloride on (LUXMOORE), T., 191; P., **1895**, 149.
action of phosphorus pentachloride on (LUXMOORE), T., 190; P., **1895**, 149.
chloro-derivative of (LUXMOORE), T., 191; P., **1895**, 149.
Benzaldoxime sulphates (LUXMOORE), T., 180; P., **1895**, 149.
o-iodo- (PATTERSON), T., 1008; P., **1896**, 153.
m-iodo-, and its dichloride (PATTERSON), T., 1008; P., **1896**, 153.
p-iodo- (PATTERSON), T., 1008; P., **1896**, 153.
Benz*syn*aldoxime, action of phosphorus trichloride on (LUXMOORE), T., 192; P., **1895**, 149.
salts of (LUXMOORE), T., 180; P., **1895**, 149.
hydrochloride (LUXMOORE), T., 179; P., **1895**, 149.
Benzaldoximes, isomerism of alkyl derivatives of (LUXMOORE), T., 187; P., **1895**, 149.
methyl derivatives of (LUXMOORE), T., 186.
Benzamide, preparation of (LUXMOORE), T., 188.
magnetic rotatory power, &c., of (PERKIN), T., 1114, 1216, 1246.
action of sodium ethoxide on (COHEN and ARCHDEACON), T., 94; P., **1896**, 8.
Benzamide, thio-, action of iodine on (HOFMANN LECTURE), T., 714.
Benzanilide, preparation of (COHEN and ARCHDEACON), T., 92.
Benzanilamide sodium ethoxide (COHEN and ARCHDEACON), T., 94; P., **1896**, 8.
Benzene, discovery of (HOFMANN LECTURE), T., 597.
Benzene, discovery of, in coal tar (HOFMANN LECTURE), T., 690.
constitution of, according to the vortex atom theory (FITZGERALD), T., 892; P., **1896**, 25.
magnetic rotatory power, &c., of (PERKIN), T., 1064, 1082, 1084, 1085, 1191, 1241.
volume changes during the formation of solutions in (JONES), P., **1895**, 179.
separation of, from coal-tar naphtha (HOFMANN LECTURE), T., 598.
Benzene, bromo-, magnetic rotatory power, &c., of (PERKIN), T., 1064, 1118, 1119, 1202, 1243.
chloro-, magnetic rotatory power, &c., of (PERKIN), T., 1064, 1118, 1202, 1243.
*m-di*chloro-, preparation of (CHATTAWAY and EVANS), T., 848; P., **1896**, 97.
condensation of with chlorobenzene (CHATTAWAY and EVANS), T., 982; P., **1896**, 114.
*p-di*chloro-, magnetic rotatory power, &c., of (PERKIN), T., 1120, 1202, 1243.
fluoro-, magnetic rotatory power, &c., of (PERKIN), T., 1118, 1119, 1162, 1201, 1243.
iodo-, magnetic rotatory power, &c., of (PERKIN), T., 1064, 1118, 1119, 1203, 1243.
nitro-, preparation of (HOFMANN LECTURE), T., 607.
magnetic rotatory power, &c., of (PERKIN), T., 1064, 1094, 1180, 1239.
*m-di*nitro-, magnetic rotatory power, &c., of (PERKIN), T., 1095, 1181, 1239.
reduction of (HOFMANN LECTURE), T., 647.
Benzene-4-azo-2-acetamidophenol, *m*-nitro- (MELDOLA, WOOLCOTT, and WRAY), T., 1324.
Benzene-4-azo-2-aminophenol, *m*-nitro- (MELDOLA, WOOLCOTT, and WRAY), T., 1325.
Benzeneazoguaiacol, *m*-nitro-, and its benzoate [OH : OMe : N_2 = 1 : 2 : 4] (MELDOLA, WOOLCOTT, and WRAY), T., 1333.
Benzeneazosalicylic acid, potassium, ethylic salts (HEWITT and STEVENSON), T., 1265; P., **1896**, 150.
o-chloro-, ammonium, potassium, silver, methylic, ethylic salts, behaviour towards bases (HEWITT and STEVENSON), T., 1258; P., **1896**, 149.

Benzeneazosalicylic acid, *m*-chloro-, ammonium, silver, barium, potassium, methylic, ethylic salts (HEWITT and STEVENSON), T., 1262; P., **1896**, 150.

p-chloro-, potassium, ammonium, barium, silver, methylic, ethylic salts (HEWITT and STEVENSON), T., 1263; P., **1896**, 150.

Benzene-6 : 1-diazoxide, 2 : 4-bromonitro- (MELDOLA, WOOLCOTT, and WRAY), T., 1327; P., **1896**, 164.

4-nitro- (MELDOLA, WOOLCOTT, and WRAY), T., 1328.

Benzene-*m*-disulphonic acid, calcium salt of (SNAPE), T., 100.

Benzene-*p*-disulphonic acid, calcium salt of (SNAPE), T., 100.

Benzenesulphonic chloride, magnetic rotatory power, &c., of (PERKIN), T., 1123, 1205, 1244.

Benzenyl-*o*-aminothiophenol, preparation of (HOFMANN LECTURE), T., 712.

Benzil, condensation of, with acetonedicarboxylic acid (JAPP and LANDER), P., **1896**, 109.

condensation of, with ethylic acetoacetate (JAPP and LANDER), T., 736; P., **1895**, 146.

condensation of, with levulinic acid (JAPP and MURRAY), P., **1896**, 146.

Benzodiethylthiourea (DIXON), T., 1604; P., **1896**, 224.

Benzoic acid, absorption by silk of dilute (WALKER and APPLEYARD), T., 1346; P., **1896**, 147.

anthraflavic acid salt of (HOFMANN LECTURE), T., 633.

allylic, butylic, *iso*-butylic, ethylic, methylic, octylic, propylic, and *iso*-propylic salts of, magnetic rotatory powers, &c., of the (PERKIN), T., 1073–1078, 1094, 1125, 1141, 1173–1175, 1226, 1237, 1238, 1247.

amylic and ethylic salts, molecular volumes in organic solvents of the (NICOL), T., 1413; P., **1895**, 237.

2-chloro-4-nitrophenol salt of (MELDOLA, WOOLCOTT, and WRAY), T., 1328; P., **1896**, 164.

2-chloro-5-nitro-phenol salt of (MELDOLA, WOOLCOTT, and WRAY), T., 1326; P., **1896**, 163.

4-chloro-3-nitrophenol salt of (MELDOLA, WOOLCOTT, and WRAY), T., 1323; P., **1896**, 163.

guaiacol salt of (MELDOLA), P., **1896**, 126, 127.

m-nitro-benzeneazoguaiacol salt of, (MELDOLA, WOOLCOTT, and WRAY), T., 1333.

Benzoic acid, *o*-nitroguaiacol salt of, [OBz : OME : NO_2 = 1 : 2 : 6] (MELDOLA), P., **1896**, 127.

p-nitroguaiacol salt of, [OBz : OME : NO_2 = 1 : 2 : 4] (MELDOLA), P., **1896**, 127.

Benzoic acid, *m*-amino-, action of chloroform and potash on (ELLIOTT), T., 1513; P., **1896**, 171.

o-iodo- (PATTERSON), T., 1007.

m-iodo- (PATTERSON) T., 1003.

Benzoic chloride, magnetic rotatory power, &c., of (PERKIN), T., 1121, 1205, 1244.

action of lead thiocyanate on (DIXON), T., 1603.

Benzoindicarboxylic acid, diamino-, and its osazone (ELLIOTT), T., 1517; P., **1896**, 171.

Benzonitrile, preparation of (LUX-MOORE), T., 189; (HOFMANN LECTURE), T., 705.

magnetic rotatory power, &c., of (PERKIN), T., 1096, 1206, 1244.

nitro-, reduction of (HOFMANN LECTURE), T., 709.

Benzophenone, magnetic rotatory power, &c., of (PERKIN), T., 1064, 1091, 1093, 1201, 1243.

Benzothiazolecarboxylic acid, preparation of (HOFMANN LECTURE), T., 713.

Benzothiocarbimide, and the action of diethylamine on (DIXON), T., 1603; P., **1896**, 224.

Benzoylacetic acid, ethylic salt, magnetic rotatory power, &c., of (PERKIN), T., 1064, 1178, 1238.

condensation of, with *o*-ethylic chlorofumarate (RUHEMANN and WOLFF), T., 1384; P., **1896**, 166.

Benzoylcannabinol (WOOD, SPIVEY, and EASTERFIELD), T., 545; P., **1896**, 76.

Benzoylglyceric acid, active, rotatory power of the methylic and ethylic salts of (FRANKLAND and MACGREGOR), T., 112; P., **1896**, 10.

Benzoylglyceric acid, inactive, methylic salt of (FRANKLAND and MACGREGOR), T., 113; P., **1896**, 10.

Benzyl methyl oxide, magnetic rotatory power, &c., of (PERKIN), T., 1090, 1190, 1241.

Benzylamine, magnetic rotatory power, &c., of (PERKIN), T., 1103, 1157, 1208, 1245.

Benzylaniline, magnetic rotatory power, &c., of (PERKIN), T., 1102, 1209, 1232, 1245.

ab-Benzylcarboxyethylthiocarbamide (Doran), T., 327; P., **1896**, 74.
Benzyldimethylamine, preparation of (Hofmann Lecture), T., 670.
Benzylic alcohol, magnetic rotatory power, &c., of (Perkin); T., 1064, 1090, 1125, 1198, 1242.
chloride, magnetic rotatory power, &c., of (Perkin), T., 1120, 1203, 1243.
sulphide, magnetic rotatory power, &c., of (Perkin), T., 1124, 1204, 1244.
Benzylphosphine, preparation of (Hofmann Lecture), T., 682.
Benzyltrimethylammonium chloride and hydroxide, action of heat on (Hofmann Lecture), T., 670.
Bismuth, rate of diffusion of, in mercury (Humphreys), T., 251; P., **1896**, 9.
Bisphenylpyrazolonecarboxylic acid, ethylic salt of (Ruhemann), T., 1396; P., **1896**, 166.
Blood, gases of the, Lothar Meyer's investigations on the (Bedson), T., 1410; P., **1896**, 119.
Boric acid, detection of, apparatus for (Doherty), P., **1896**, 101.
Bran, dry distillation of, with lime (Laycock), P., **1896**, 38.
Bricks, efflorescence on, exposed to sulphurous anhydride (Paterson), T., 66; P., **1895**, 203.
Britannia-violet, discovery of (Hofmann Lecture), T., 618.
Bromal hydrate, crystalline forms of (Pope), P., **1896**, 142.
Butter, estimation of butyric acid in (Wilcox), P., **1895**, 202.
iso-Butenylbenzene. See Phenylbutylene.
iso-Butylanhydrodibenzilacetoacetic acid (Japp and Lander), T., 740; P., **1895**, 146.
silver and barium salts (Japp and Lander), T., 740; P., **1895**, 146.
ethylic and *iso*-butylic (?) salts of, reduction of (Japp and Lander), T., 743; P., **1895**, 146.
iso-Butylbenzene, magnetic rotatory power, &c., of (Perkin), T., 1082, 1083, 1192, 1241.
ab-iso-Butylcarboxyethylthiocarbamide (Doran), T., 331; P., **1896**, 75.
iso-Butylene, formation of (Hooker), T., 1356.
iso-Butylic alcohol, action of light on (Richardson and Fortey), T., 1352; P., **1896**, 164.
Butyric acid, ethylic salt, molecular volume of, in organic solvents (Nicol), T., 143; P., **1895**, 237.
Butyric acid, phenylic salt, magnetic rotatory power, &c., of (Perkin), T., 1075, 1076, 1078, 1180, 1238.
estimation of (Wilcox), P., **1895**, 202.
iso-Butyric chloride, action of mercuric or lead thiocyanate on (Dixon), T., 862; P., **1896**, 100.
Butyrolactone (Bentley, Haworth, and Perkin), T., 168; P., **1896**, 36.
Butyronitrile, preparation of (Hofmann Lecture), T., 696.
Butyrylmalonic acid, specific rotation of the ethylic salt of (Purdie and Williamson), T., 825.
ab-iso-Butyryl-α-naphthylthiocarbamide (Dixon), T., 865; P., **1896**, 101.
ab-iso-Butyrylphenylthiocarbamide (Dixon), T., 862; P., **1896**, 101.
action of silver nitrate on (Dixon), T., 863; P., **1896**, 101.
ab-iso-Butyrylphenylurea (Dixon), T., 863; P., **1896**, 101.
iso-Butyrylthiocarbimide (Dixon), T., 862.
action of aniline, *o*- and *p*-toluidine, and α-naphthylamine on (Dixon), T., 862–865.
ab-iso-Butyryl-*o*-tolylthiocarbamide and action of silver nitrate on (Dixon), T., 863; P., **1896**, 101.
ab-iso-Butyryl-*p*-tolylthiocarbamide and action of silver nitrate on (Dixon), T., 864; P. **1896**, 101.
ab-iso-Butyryl-*o*-tolylurea (Dixon), T., 863; P., **1896**, 101.
ab-iso-Butyryl-*p*-tolylurea (Dixon), T., 864; P., **1896**, 101.

C.

Cadmium solution and diffusion of, in mercury (Humphreys), T., 1680; P., **1896**, 220.
Cadmium-alloys with lead and with zinc, solution and diffusion of, in mercury (Humphreys), T., 1681: P., **1896**, 220.
Cadmium cæsium sulphate, density and optical behaviour of (Tutton), T., 451.
rubidium sulphate, density and optical behaviour of (Tutton), T., 445.
Cæsium sulphate, constitution of double salts containing (Tutton), T., 519; P., **1896**, 71.
cadmium sulphate, density and optical behaviour of (Tutton), T., 451.
cobalt sulphate, density and optical behaviour of (Tutton), T., 428.

Cæsium copper sulphate, density and optical behaviour of (TUTTON), T., 441.
ferrous sulphate, density and optical behaviour of (TUTTON), T., 396.
magnesium sulphate, density and optical behaviour of (TUTTON), T., 366.
manganous sulphate, density and optical behaviour of (TUTTON), T., 403.
nickel sulphate, density and optical behaviour of (TUTTON), T., 415.
zinc sulphate, density and optical behaviour of (TUTTON), T., 383.
Caffeine periodide, analogy of, to theobromine periodide (SHAW), T., 103; P., **1895**, 177.
Calcium chloride, hexahydrated, absorption of moisture by (HAKE), P., **1896**, 34.
imidosulphonates (DIVERS and HAGA), T., 1625: P., **1896**, 179.
mercury imidosulphonate (DIVERS and HAGA), T., 1630; P., **1896**, 179.
Camphanic acid from *w*-bromocamphoric acid (KIPPING), T., 65; P., **1895**, 213.
from chlorocamphoric anhydride (MARSH and GARDNER), T., 82.
π-bromo- (KIPPING), P., **1895**, 212.
π-Camphanic acid, lactoanhydride (KIPPING), T., 942.
cis-π-Camphanic acid, circular polarisation of, in the crystalline state (POPE), T., 974; P., **1896**, 116.
crystallography and pyroelectric properties of (POPE), T., 973; P., **1896**, 116.
methylic salt, anhydride (KIPPING), T., 943; P., **1896**, 115.
trans-π-Camphanic acid, oxidation of (KIPPING), T., 960; P., **1896**, 115.
silver, ammonium salts, anhydride, amide (KIPPING), T., 929; P., **1895**, 33, 88, 211; **1896**, 114.
Camphene, constitution of (MARSH and GARDNER), T., 90; (TILDEN), T., 1014.
from pinene (TILDEN and NICHOLLS), P., **1896**, 138.
oxidation of (MARSH and GARDNER), T., 74; P., **1895**, 206.
Camphene, α-*di*chloro- (KIPPING and POPE), P., **1895**, 57; (LAPWORTH and KIPPING), T., 1559; P., **1896**, 152, 188.
Camphenephosphonic acid, chloro-, oxidation of (MARSH and GARDNER), T., 75.
Camphenesulphonic acid, α-chloro-, potassium and sodium salts, chloride, amide, anilide (KIPPING and POPE), P., **1895**, 57; (LAPWORTH and KIPPING), T., 1551; P., **1896**, 152, 188.
β-chloro-, potassium, sodium, barium, salts, lactone, chloride, amide, anilide (KIPPING and POPE), P., **1895**, 57; LAPWORTH and KIPPING), T., 1560; P., **1896**, 152, 188.
Camphoic acid and its monammonium, triammonium, copper, and triplumbic salts (MARSH and GARDNER), T., 75; P., **1895**, 206.
Campholide, hydrolysis of (FORSTER), T., 55; P., **1895**, 209.
α-bromo-, hydrolysis of (FORSTER), T., 50; P., **1895**, 209.
β-bromo- (FORSTER), T., 54; P., **1895**, 209.
*di*bromo-, and its hydrolysis (FORSTER), T., 41; P., **1895**, 208.
allo-Campholytic acid ethylic salt, (WALKER and HENDERSON), T., 749.
Camphopyranilic acid (MARSH and GARDNER), T., 83; P., **1895**, 206.
cis-Camphopyric acid and its lead and sodium salts and chloride (MARSH and GARDNER), T., 77; P. **1895**, 206.
meso-Camphopyric acid (MARSH and GARDNER), T., 79.
trans-Camphopyric acid (MARSH and GARDNER), T., 80; P., **1895**, 206.
Camphopyric anhydride (MARSH and GARDNER), T., 77; P., **1895**, 206.
chloro- (MARSH and GARDNER), T., 83; P., **1895**, 206.
Camphopyric chloride (MARSH and GARDNER), T., 78; P., **1895**, 206.
chloro- (MARSH and GARDNER), T., 80; P., **1895**, 206.
Camphor, constitution of (MARSH and GARDNER), T., 90.
Camphor, amino-, from π-bromo-α-nitrocamphor and its hydrochloride and platinochloride (LAPWORTH and KIPPING), T., 315; P., **1895**, 210.
π-bromo-, from απ-dibromocamphor, oxime of (REVIS and KIPPING), P., **1896**, 77.
α-*di*bromo-, behaviour of, towards nitric acid (FORSTER), T., 36; P., **1895**, 207.
απ-*di*bromo-, oxidation of (KIPPING), T., 915; P., **1895**, 210; **1896**, 114.
π-brom-α-amino-, hydrochloride, oxalate, platinochloride, and acetyl

derivative (LAPWORTH and KIPPING), T., 316; P., **1895**, 210.
Camphor, π-bromo-α-nitro-, three modifications of, and the potassium, ammonium, sodium, barium, calcium, copper, manganese, zinc, nickel, cobalt, bismuth, lead derivatives (LAPWORTH and KIPPING), T., 309; P., **1895**, 210.
απ-*di*bromo-α-nitro- (LAPWORTH and KIPPING), T., 308; P., **1895**, 209.
π-bromo-α-*iso*nitro-, and its potassium, barium, calcium, cobalt, nickel, copper, mercuric, bismuth, and acetyl derivatives (LAPWORTH and KIPPING), T., 317; P., **1895**, 210.
π-chloro-, oxidation of (KIPPING and POPE), P., **1895**, 213.
α-chloronitro-, conversion of, into camphorquinone (LAPWORTH), T., 322; P., **1896**, 76.
Camphorenic acid, sodium, zinc, and methylic salts (FORSTER), T., 52; P., **1895**, 208.
bromo-, barium, silver, zinc, ammonium, copper, methylic salts, and oxidation of (FORSTER), T., 46; P., **1895**, 208.
Camphorenic anhydride (FORSTER), T., 52; P., **1895**, 208.
Camphoric acid, constitution of (MARSH and GARDNER), T., 90; (WALKER and HENDERSON), T., 957; P., **1896**, 110.
from camphene (MARSH and GARDNER), T., 84; P., **1895**, 206.
compound of, with acetone (POPE), T., 1696; P., **1896**, 217.
potassium allo-ethylic salt, electrolysis of (WALKER and HENDERSON), T., 748; P., **1896**, 110.
Camphoric acid, π-bromo- (KIPPING), T., 924: P., **1895**, 34, 210; **1896**, 114.
methylic salt (KIPPING), T., 924; P., **1895**, 34, 210; **1896**, 114.
ω-bromo- (KIPPING), T., 63; P., **1895**, 212.
π-chloro- (KIPPING and POPE), P., **1895**, 213.
d-Camphoric acid, from π-bromocamphoric acid (KIPPING), T., 928.
Camphoric anhydride, π-bromo- (KIPPING), T., 927; P., **1896**, 114.
ω-bromo- (KIPPING), P., **1895**, 212.
π-dibromo- (KIPPING), P., **1895**, 212.
chloro- (MARSH and GARDNER), T., 82.
Camphoric chloride, chloro- (MARSH and GARDNER), T., 81.
Camphoroxime, behaviour of, towards methylic iodide (FORSTER), P., **1896**, 146.
hydrobromide, methyl and acetyl derivatives of (FORSTER), P., **1896**, 146.
Camphorquinone, from α-chloronitrocamphor (LAPWORTH), T., 323; P., **1896**, 76.
Camphorsulphonic acid, α-bromo-, oxidation of ammonium salt (LAPWORTH and KIPPING), P., **1896**, 77.
cis-Camphotricarboxylic acid, and its silver salt, and anhydride (KIPPING), T., 966; P., **1896**, 115.
trans-Camphotricarboxylic acid, hydrated, crystallography and circular polarisation of (POPE), T., 978; P., **1896**, 116.
and its silver, calcium salts and anhydride (KIPPING), T., 951; P., **1896**, 115.
Cannabin, preparation of cannabinol from (WOOD, SPIVEY, and EASTERFIELD, T., 546; P., **1896**, 76.
Cannabinol, active constituent of Indian hemp (WOOD, SPIVEY, and EASTERFIELD), T., 544; P., **1896**, 76.
existence of, in pharmaceutical preparation (WOOD, SPIVEY, and EASTERFIELD), T., 545; P., **1896**, 76.
acetyl and benzoyl derivatives of (WOOD, SPIVEY, and EASTERFIELD), T., 545; P., **1896**, 76.
Cannabinone, preparation of cannabinol from (WOOD, SPIVEY, and EASTERFIELD), T., 546; P., **1896**, 76.
Cannabis indica, constituents of (WOOD, SPIVEY, and EASTERFIELD), T., 539; P., **1896**, 76.
Caprylic acid. See Octoic acid.
Carbamide, action of hypobromites on, in presence of a cyanate (ALLEN), P., **1896**, 31.
Carbamides, alkyl substituted, rate of formation of, from the corresponding cyanates (WALKER and APPLEYARD), T., 193; P., **1896**, 12.
Carbazole, discovery of (HOFMANN LECTURE), T., 631.
Carbohydrates of barley straw (CROSS, BEVAN, and SMITH), T., 1604; P., **1896**, 174.
relation of furfuroids to total, from barley straw (CROSS, BEVAN, and SMITH), T., 1606; P., **1896**, 174.
Carbon atom, asymmetric (FITZGERALD), T., 892; P., **1896**, 25.
direct union of, with hydrogen (BONE and JORDAN), P., **1896**, 61.

Carbon:—
Carbonic oxide, evolution of, by alkaline pyrogallol during oxygen estimations (Clowes), P., **1895**, 200.
duration of the flame in the explosive combustion of moist and dry (Dixon, Strange, and Graham), T., 773; P., **1896**, 55.
combustion of oxygen with (Dixon), T., 774; P., **1896**, 55.
explosive mixtures of air and (Clowes), P., **1895**, 201.
combination of, with nitrous oxide (Dixon), T., 780; P., **1896**, 56.
Carbonic anhydride, mode of formation of, in the combustion of carbon compounds (Dixon), T., 774; P., **1896**, 55.
effect of electric sparks on (Hofmann Lecture), T., 728.
solubility of, in sodium phosphate solution, L. Meyer's investigation on (Bedson), T., 1413.
estimation of, volumetrically (Symons and Stephens), T., 869; P., **1896**, 103.
Carbonic acid, chloro-, action of phenylacetylthiocarbamide on (Doran), T., 343.
action of phenylthiocarbamide on (Doran), T., 342.
action of lead thiocyanate on (Doran), T., 325; P., **1896**, 74.
Carbon bisulphide, magnetic rotatory power, &c., of (Perkin), T., 1123.
volume changes during the formation of solutions in (Jones), P., **1895**, 179.
influence of, on the combination of carbonic oxide and oxygen (Dixon), T., 783; P., **1896**, 56.
ab-Carboxyethylethylthiocarbamide (Doran), T., 330; P., **1896**, 75.
ab-Carboxyethylmethylthiocarbamide (Doran), T., 330; P., **1896**, 75.
Carboxyethylthiocarbamic acid, salts of, action of silver nitrate on (Doran), T., 335.
methylic, ethylic, propylic, *iso*butylic, and benzylic salts (Doran), T., 334; P., **1896**, 75.
Carboxyethylthiocarbimide (Doran), T., 326, 335.
derivatives of, constitution of, and isomerism of (Doran), T., 337.
action of ammonia, amines, piperidine, and phenylhydrazine on (Doran), T., 327—339; P., **1896**, 74, 75.
Carboxyethylethylthiocarbimide, action of alcohols on (Doran), T., 333; P., **1896**, 75.
action of water on (Doran), T., 336.
Carboxyethylthiourea (Doran), T., 331; P., **1896**, 75.
Carboxyethyl-ψ-thiourea, hydrochloride of and hydrolysis of (Doran), T., 341.
Carvacrol, magnetic rotatory power, &c., of (Perkin), T., 1132, 1183, 1239.
Catechin, non-formation of acid compounds of (Perkin), T., 1440; P., **1896**, 167.
Catechol, magnetic rotatory power, &c., of (Perkin), T., 1127, 1130, 1135, 1184, 1240.
Catechol, dinitro- (Meldola, Woolcott, and Wray), T., 1333.
5-nitro-3-amino- (Meldola, Woolcott, and Wray), T., 1334; P., **1896**, 164.
Cedrene (Chapman and Burgess), P., **1896**, 140.
Cellulose, composition of the soluble products of acid hydrolysis of (Cross, Bevan, and Smith), T., 810; P., **1896**, 96.
insoluble, obtained by acid hydrolysis, composition of (Cross, Bevan, and Smith), T., 809; P., **1896**, 96.
separation of wheat straw into insoluble cellulose and soluble products (Cross, Bevan, and Smith), T., 807; P., **1896**, 96.
separation of, from furfuroids by acid hydrolysis (Cross, Bevan, and Smith), T., 806; P., **1896**, 96.
Celluloses of barley straw: their reactions (Cross, Bevan, and Smith), T., 1609; P., **1896**, 175.
cereal, constitution of the (Cross, Bevan, and Smith), T., 804; P., **1896**, 95.
acid hydrolysis of, and separation of the constituent groups (Cross, Bevan, and Smith), T., 804; P., **1896**, 96.
Charas, constituents of (Wood, Spivey, and Easterfield), T., 539; P., **1896**, 76.
Cheiranthus cheiri, quercetin, the yellow colouring matter of (Perkin and Hummel), T., 1567; P., **1896**, 185.
Chloral, condensation of, with resorcinol (Hewitt and Pope), T., 1265; P., **1896**, 150.
Chloral hydrate, two crystalline forms of (Pope), P., **1896**, 142.
condensation of, with resorcinol (Hewitt and Pope), T., 1266; P., **1896**, 150.

Chloranil (*tetrachloroquinone*), preparation of (HOFMANN LECTURE), T., 641, 699.
Chlorine, formation of, on heating manganese dioxide with potassium chlorate (MCLEOD), T., 1015; P., **1896**, 104.
Hydrochloric acid, absorption by silk of dilute (WALKER and APPLEYARD), T., 1346; P., **1896**, 147.
Chlorine peroxide, detonation of (DIXON and HARKER), T., 789; P., **1896**, 57.
Chrome alum, effect of heat on aqueous solutions of (DOUGAL), T., 1526; P., **1896**, 183.
Chromosulphuric acid, colloidal (CALVERT and EWAN), P., **1896**, 160.
Chrysaniline (*diaminophenylacridine*), discovery of (HOFMANN LECTURE), T., 610.
Chrysin, non-formation of acid compounds of (PERKIN), T., 1443; P., **1896**, 167.
Chrysoidine, composition of (HOFMANN LECTURE), T., 626.
Cinnamaldehyde, magnetic rotatory power, &c., of (PERKIN), T., 1125, 1145, 1149, 1227, 1247.
Cinnamene. See Styrene.
iso-Cinnamenylmandelic acid (JAPP and LANDER), P., **1896**, 108.
Cinnamic acid (*β-phenylacrylic acid*), physiological action of (HOFMANN LECTURE), T., 698.
ethylic salt, magnetic rotatory power, &c., of the (PERKIN), T., 1145, 1149, 1228, 1247.
Cinnamic alcohol, magnetic rotatory power, &c., of (PERKIN), T., 1064, 1126, 1149, 1228, 1247.
Citraconic acid, ethylic salt, magnetic rotatory power and relative density of (PERKIN), T., 1063, 1173, 1237.
Citraconic anhydride, magnetic rotatory power and relative density of (PERKIN), T., 1063, 1173, 1237.
Citrazinic acid (2; 6-*dihydroxypyridine*-3-*carboxylic acid*), discovery of (HOFMANN LECTURE), T., 724.
action of chloroform and sodium hydroxide on (SELL), T., 1448; P., **1896**, 168.
Citric acid, absorption by silk of dilute (WALKER and APPLEYARD), T., 1346; P., **1896**, 147.
Cobalt, action of hydrogen peroxide on solutions containing (DURRANT), P., **1896**, 96.
cæsium sulphate, density and optical behaviour of (TUTTON), T., 428.
potassium sulphate, density and optical behaviour of (TUTTON), T., 419.
Cobalt, rubidium sulphate, density and optical behaviour of (TUTTON), T., 421.
detection of, in presence of nickel (DURRANT), P., **1896**, 96.
Colophony. See Rosin.
Coniceines, preparation of (HOFMANN LECTURE), T., 724.
Coniine, constitution of (HOFMANN LECTURE), T., 723.
Conhydrine, constitution of (HOFMANN LECTURE), T., 724.
Conyrine (*2-propylpyridine*), preparation of (HOFMANN LECTURE), T., 723.
Copper, solubility and rate of diffusion of, in mercury (HUMPHREYS), T., 247; P., **1896**, 9; (ROBERTS-AUSTEN), P., **1896**, 219.
Copper-alloys with tin, solution and diffusion of, in mercury (HUMPHREYS), T., 1682; P., **1896**, 220.
with zinc solution and diffusion of, in mercury (HUMPHREYS), T., 1682; P., **1896**, 220.
Copper cæsium sulphate, density and optical behaviour of (TUTTON), T., 441.
potassium sulphate, density and optical behaviour of (TUTTON), T., 431.
rubidium sulphate, density and optical behaviour of (TUTTON), T., 437.
Cuprous gold sulphide (MACLAURIN), T., 1275; P., **1896**, 149.
Coumarone, magnetic rotatory power, &c., of (PERKIN), T., 1201, 1240.
Cratægus Oxyacantha, colouring matter in (PERKIN and HUMMEL), T., 1570; P., **1896**, 186.
Creosol, magnetic rotatory power, &c., of (PERKIN), T., 1127, 1135, 1185, 1240.
iso-Creosol, magnetic rotatory power, &c., of (PERKIN), T., 1127, 1185, 1240.
o-Cresol, magnetic rotatory power, &c., of (PERKIN), T., 1126, 1129, 1183, 1239.
m-Cresol, magnetic rotatory power, &c., of (PERKIN), T., 1126, 1129, 1183, 1239.
p-Cresol, magnetic rotatory powers, &c., of (PERKIN), T., 1126, 1129, 1183, 1239.
Crotonic acid, ethylic salt, condensation of, with acetoacetic acid (RUHEMANN and WOLFF), T., 1391; P., **1896**, 166.
Crystallography:—
Atomic weight, influence of, on the crystal characters of the sulphates containing potassium, rubidium, and cæsium (TUTTON), T., 495; P. **1896**, 71.

Crystallography :—
Axes of the optical ellipsoid of the double sulphates of potassium, rubidium, and cæsium, velocity of light along the (Tutton), T., 466; P., **1896**, 69.
Axes of the optical ellipsoid, orientation of, for double sulphates of potassium, rubidium, and cæsium (Tutton), T., 460; P., **1896**, 69.
Cleavage of double sulphates of potassium, rubidium, and cæsium (Tutton), T., 455; P., **1896**, 68.
Distance ratios of the double sulphates of potassium, rubidium, and cæsium (Tutton), T., 458; P., **1896**, 69.
Morphology of the double sulphates of potassium, rubidium, and cæsium (Tutton), T., 486.
of chloral and bromal hydrates, thymol, and menthol (Pope), P., **1896**, 142.
of *cis*-π-camphanic acid (Pope), T., 973; P., **1896**, 116.
of *trans*-camphotricarboxylic acid (hydrates) (Pope), T., 978; P., **1896**, 116.
Optic axial angles of the double sulphates of potassium, rubidium, and cæsium (Tutton), T., 480; P., **1896**, 70.
Point systems corresponding to the sulphates containing potassium, rubidium, and cæsium (Tutton), T., 504.
Polymorphism and molecular complexity (Tutton), T., 509.
Structural unit of the crystals of sulphates containing potassium, rubidium, and cæsium (Tutton), T., 507; P., **1896**, 71.
Cumene (*isopropylbenzene*), magnetic rotatory power, &c., of (Perkin), T., 1082—1084, 1194, 1241.
formation of, from cuminic acid (Hofmann Lecture), T., 611.
n-Cumene (*propylbenzene*), magnetic rotatory power, &c., of (Perkin), T., 1082, 1083, 1094, 1192, 1241.
ψ-Cumene (1 : 3 : 4-*trimethylbenzene*), magnetic rotatory power, &c., of (Perkin), T., 1064, 1130, 1193, 1241.
separation of, from coal-tar naphtha (Hofmann Lecture), T., 598.
p-Cumidine, preparation of (Hofmann Lecture), T., 625.
action of cyanogen on (Hofmann Lecture), T., 590, 649.
p-Cumidine, colouring matter obtained by oxidation of (Hofmann Lecture), T., 605.
Cuminaldehyde (*p-isopropylbenzaldehyde*), magnetic rotatory power, &c., of (Perkin), T., 1125, 1199, 1242.
Cuminic acid (*o-isopropylbenzoic acid*), ethylic salt, magnetic rotatory power, &c., of (Perkin), T., 1125, 1176, 1238.
Cuminyl alcohol, magnetic rotatory power, &c., of (Perkin), T., 1125, 1198, 1242.
Cyaniline, preparation of (Hofmann Lecture), T., 649.
Cyanogen, spectrum of the flame of (Lewes), T., 240; P., **1896**, 2.
luminosity of the flame of (Groves), P., **1896**, 5.
combustion of (Dixon), T., 775; P., **1896**, 55.
explosive combustion of (Dixon, Strange, and Graham), T., 759; P., **1896**, 53.
duration of the flame in the explosive combustion of (Dixon, Strange, and Graham), T., 763; P., **1896**, 54.
influence of, on the combination of carbonic oxide and oxygen (Dixon), T., 783; P., **1896**, 56.
Cyanic acid, ethereal salts of (Hofmann Lecture), T., 654.
ethylic salt of, preparation of (Hofmann Lecture), T., 716.
rate of change into the corresponding carbamides of the methyl-, dimethyl-, ethyl-, diethyl-, iso-amyl-, and tertiary amyl-ammonium salts of (Walker and Appleyard), T., 193—202; P., **1896**, 12.
action of heat on solutions of the tetramethyl- and triethyl-ammonium salts of (Walker and Appleyard), T., 205; P., **1896**, 12.
Cyanuric acid, discovery and constitution of (Hofmann Lecture), T., 717.
triethylic salt, preparation of (Hofmann Lecture), T., 716.
Cyanuric acid, trithio-, trimethylic salt (Hofmann Lecture), T., 717.
iso-Cyanuric acid, trichlorotrimethylic salt of (Hofmann Lecture), T., 718.
triphenylic salt of (Hofmann Lecture), T., 715.

Cyanogen.
iso-Cyanuric acid, thio-, ethereal salts of, discovery of (HOFMANN LECTURE), T., 718.
Cyanomaclurin, non-formation of acid compounds of (PERKIN), T., 1440; P., **1896**, 167.
Cymene (p-*methylisopropylbenzene*), magnetic rotatory power, &c., of (PERKIN), T., 1125, 1194, 1242.
Cymophenone. See Phenyl cymyl ketone.

D.

Datiscetin, non-formation of acid compounds of (PERKIN), T., 1440; P., **1896**, 167.
Datisca cannabina, datiscetin, the colouring matter of (PERKIN), T., 1440; P., **1896**, 167.
Dehydrolapachone, constitution of (HOOKER), T., 1369.
ψ-Dehydrolapachone (HOOKER), T., 1362, 1377.
Density of liquids, method of determining (PERKIN), T., 1043; P., **1896**, 122.
of liquid oxygen and air (DEWAR), P., **1895**, 226.
of double sulphates of potassium, rubidium, and cæsium (TUTTON), T., 456; P., **1896**, 68.
Density, vapour, Hofmann's method for the determination of (HOFMANN LECTURE), T., 724.
of metaphosphoric acid (TILDEN and BARNETT), T., 158; P., **1896**, 30.
of phosphoric anhydride (TILDEN and BARNETT), T., 154; P., **1896**, 30.
Deoxybenzoin. See Phenyl benzyl ketone.
Desylacetic acid (*β-benzoyl-β-phenylpropionic acid*), formation of, from desyleneacetic acid (JAPP and LANDER), P., **1896**, 109.
formation of, from diphenyldihydroxyglutonic acid (JAPP and LANDER), P., **1896**, 108.
Desyleneacetic acid (*β-benzoylcinnamic acid*), formation of, from anhydracetonebenzil (JAPP and LANDER), P., **1896**, 107.
reduction of (JAPP and LANDER), P., **1896**, 109.
Dextrin, reducing power of, on ammoniacal silver nitrate (HENDERSON), T., 151; P., **1896**, 9.
Dextrose. See Glucose.
Diacetamidoazobenzene (MELDOLA and ANDREWS), T., 11; P., **1895**, 215.
Diacetamidoazoxybenzene (MELDOLA and ANDREWS), T., 8; P., **1895**, 215.
1 : 3 : 1′-Diacetoxymethylanthracene (SCHUNCK and MARCHLEWSKI), T., 71; P., **1895**, 202.
Diacetylacetone, condensation of (COLLIE and WILSMORE), T., 295; P., **1896**, 47.
Diacetylglyceric acid, ethylic salt, rotatory power of solutions of, in benzene and acetic acid (FRANKLAND and PICKARD), T., 135, 136; P., **1896**, 11.
freezing points of solutions of, in benzene and acetic acid (FRANKLAND and PICKARD), T., 134, 135; P., **1896**, 11.
Diazo-compounds, discovery of (HOFMANN LECTURE), T., 698.
Diazoaminobenzene, *o-di*nitro-, alkylation of (MELDOLA and STREATFEILD), P., **1896**, 49.
*p-di*nitro-, alkylation of (MELDOLA and STREATFEILD), P., **1896**, 51.
*op-di*nitro-, ethyl derivative (MELDOLA and STREATFEILD), P., **1896**, 50.
Diazobenzene, *op-di*chloro- (CHATTAWAY and EVANS), T., 850; P., **1896**, 98.
6 : 1-Diazoxyanisoil, 4-nitro- (MELDOLA, WOOLCOTT, and WRAY), T., 1332; P., **1896**, 164.
3 : 2-Diazoxyphenol, 5-nitro- (MELDOLA, WOOLCOTT, and WRAY), T., 1334; P., **1896**, 164.
Dibenzaconine and its salts (DUNSTAN and CARR), P., **1895**, 178.
Dibenzamidoazobenzene (MELDOLA and ANDREWS), T., 12; P., **1895**, 215.
Dibenzodithiazole, preparation of (HOFMANN LECTURE), T., 713.
Dibenzoxydiphenylmethane (MACKENZIE), T., 992; P., **1896**, 117.
Dibenzoylglyceric acid, methylic salt, rotatory powers of solutions of, in benzene, ethylene dibromide, nitrobenzene, and acetic acid (FRANKLAND and PICKARD), T., 127, 130, 131, 133; P., **1896**, 11.
freezing points of solutions of, in benzene, ethylene dibromide, nitrobenzene, and acetic acid (FRANKLAND and PICKARD), T., 125, 127, 129, 131, 132; P., **1896**, 11.
Dibenzoylglyceric acid (active), methylic, ethylic, and propylic salts, rotatory power of the (FRANKLAND

and MacGregor), T., 104; P., **1896**, 9.
Dibenzoylglyceric acid (inactive), methylic salt (Frankland and MacGregor), T., 106; P., **1896**, 9.
Dibenzoylphenylacetic acid and its silver salt (Japp and Lander), T., 741; P., **1895**, 146.
Dibenzoylphenylmethane (Japp and Lander), T., 742; P., **1895**, 146.
Dibenzoyltartaric acid, rotatory powers of the methylic and ethylic salts of (Frankland and Wharton), T., 1585; P., **1896**, 186.
Dibenzyl, magnetic rotatory power, &c., of (Perkin), T., 1085, 1086, 1195, 1242.
Dibenzylamine, magnetic rotatory power, &c., of (Perkin), T., 1103, 1208, 1245.
Dibenzylphosphine, preparation of (Hofmann Lecture), T., 682.
Diethoxydiphenylmethane (Mackenzie), T., 990; P., **1896**, 117.
Diethylamine, discovery of (Hofmann Lecture), T., 661.
Diethylaniline (Hofmann Lecture), T., 598.
discovery of (Hofmann Lecture), T., 660.
magnetic rotatory power, &c., of (Perkin), T., 1099, 1100, 1208, 1244.
action of ethylic bromide on (Hofmann Lecture), T., 663.
sulphonation of (Evans), P., **1895**, 235.
Diethyldiethylenediamine, discovery of (Hofmann Lecture), T., 685.
Diethylenediamine (Hofmann Lecture), T., 684, 685.
Diethylenetriamine, discovery of, and its salts (Hofmann Lecture), T., 686.
Diethylethylenediamine, discovery of (Hofmann Lecture), T., 685.
Diethyloxamic acid, ethylic salt, preparation of (Hofmann Lecture), T., 662.
Diethyloxamide, preparation of (Hofmann Lecture), T., 662.
Diethylphosphonic acid, preparation of (Hofmann Lecture), T., 682.
Diffusion of metals in mercury (Humphreys), T., 243, 1679; P., **1896**, 9, 220; (Roberts-Austen), P., **1896**, 219.
Difluoryls, α-, β-, and γ- (Hodgkinson), P., **1896**, 111.
Dihydrocymene. See Methyl*iso*propyl*cyclo*hexadiene.
Dihydroxydiphenylglutaric acid (Japp and Lander), P., **1896**, 108.
1 : 2-Dihydroxyflavone, acid compounds of (Perkin), T., 1443; P., **1896**, 167.
Dihydroxyhydrolapachol, action of sulphuric acid on (Hooker), T., 1368.
Dihydroxylamine hydriodide (Dunstan and Goulding), T., 841; P., **1896**, 73.
Dihydroxymaleic acid (Fenton), T., 547; P., **1896**, 67.
constitution of (Fenton), T., 556.
isomeric form of (Fenton), T., 557.
α- and β-modifications (Fenton), T., 560.
action of acetic anhydride, chloride, and benzoic chloride on (Fenton), T., 550, 551, 552; P., **1896**, 68.
action of aniline on (Fenton), T., 552.
action of bromine on (Fenton), T., 547.
action of ethylic bromide on (Fenton), T., 554.
action of hydrogen bromide, chloride, and iodide on (Fenton), T., 547, 553, 555, 558; P., **1896**, 68.
action of hydroxylamine and phenylhydrazine on (Fenton), T., 548, 549; P., **1896**, 68.
action of water on (Fenton), T., 547.
Dihydroxymaleic acid, aniline salts (Fenton), T., 551, 552.
diethylic salt (Fenton), T., 554.
behaviour of, with dehydrating agents (Fenton), T., 555.
action of phenylhydrazine and hydroxylamine on (Fenton), T., 549; P., **1896**, 68.
dimethylic salt, diacetyl derivative (Fenton), T., 550.
action of acetic chloride, of phenylhydrazine, and hydroxylamine on (Fenton), T., 549; P., **1896**, 68.
phenylhydrazine salt, and action of heat on (Fenton), T., 548; P., **1896**, 68.
Dihydroxymaleic anhydride, diacetyl and dibenzoyl derivatives of (Fenton), T., 551.
Dihydroxy-β-naphthaquinone, discovery of (Hofmann Lecture), T., 621.
o-Dimethoxybenzene, magnetic rotatory power, &c., of (Perkin), T., 1127, 1135, 1159, 1188, 1240.
m-Dimethoxybenzene, magnetic rota-

tory power, &c., of (PERKIN), T., 1127, 1159, 1187, 1240.
p-Dimethoxybenzene, magnetic rotatory power, &c., of (PERKIN), T., 1064, 1136, 1188, 1240.
Dimethoxydiphenylmethane (MACKENZIE), T., 987; P., **1896**, 117.
Dimethylacetoacetic acid, ethylic salt, action of ethylic bromacetate on (PERKIN and THORPE), P., **1896**, 156.
Dimethylacetylacetone, magnetic rotatory power and relative density of (PERKIN), T., 1063, 1172, 1237.
Dimethylaniline, preparation of (HOFMANN LECTURE), T., 624, 625.
magnetic rotatory power, &c., of (PERKIN), T., 1064, 1099, 1100, 1108, 1156, 1207, 1232, 1244.
sulphonation of (EVANS), P., **1895**, 235.
hydrochloride, magnetic rotatory power, &c., of (PERKIN), T., 1110, 1158, 1218, 1220, 1221, 1235, 1246.
Dimethylaniline, *tetra*bromo- (EVANS), P., **1895**, 235, 236.
2 : 4-*di*nitro- (EVANS), P., **1895**, 236.
Dimethylaniline-*m*-sulphonic acid, *p*-bromo- (EVANS), P., **1895**, 236.
*di*bromo- (EVANS), P., **1895**, 236.
*di*nitro- (EVANS), P., **1895**, 236.
Dimethylaniline-*p*-sulphonic acid, preparation of (EVANS), P., **1895**, 235.
bromo-, and its dibromide (EVANS), P., **1895**, 235.
o-nitro- (EVANS), P., **1895**, 236.
αα-Dimethylcyanosuccinic acid, ethylic salt (BONE and PERKIN), T., 259; P., **1896**, 63.
Dimethyldiethylammonium iodide, preparation of (HOFMANN LECTURE), T., 670.
ββ-Dimethylglutaranil (PERKIN), T., 1476.
ββ-Dimethylglutaranilic acid (PERKIN), T., 1476; P., **1896**, 170.
αα$_1$-Dimethylglutaric acids, resolution of a mixture of (BONE and PERKIN), T., 268; P., **1896**, 63.
ββ-Dimethylglutaric acid and salts (PERKIN and GOODWIN), T., 1473; P., **1896**, 170.
high dissociation constant of (PERKIN), T., 1461.
action of acetic anhydride on (PERKIN and GOODWIN), T., 1475.
ethylic salt (PERKIN and GOODWIN), T., 1475.
ββ-Dimethylglutaric anhydride (PERKIN and GOODWIN), T., 1475; P., **1896**, 170.
ββ-Dimethylglutaric anhydride, action of aniline on (PERKIN), T., 1476.
1 : 3-Dimethyl*cyclo*hexane (*hexahydro-m-xylene*) from camphoryric acid (MARSH and GARDNER), T., 84; P., **1895**, 206.
1 : 2-Dimethyl*cyclo*hexane-4-carboxylic acid (*hexahydro-p-xylic acid*) and its ethylic salt, chloride, and anilide (BENTLEY and PERKIN), P., **1896**, 79.
bromo-, ethylic salt of (BENTLEY and PERKIN), P., **1896**, 79.
3 : 4-Dimethyl*cyclo*hexenecarboxylic acid (*tetrahydro-p-xylic acid*) [Me_2 : COOH = 4 : 3 : 1] (BENTLEY and PERKIN), P., **1896**, 79.
dibromide (BENTLEY and PERKIN), P., **1896**, 79.
Dimethylhomocatechol, magnetic rotatory power, &c., of (PERKIN), T., 1127, 1135, 1188, 1240.
3 : 3′-Dimethylnaphthalene, from 2-acetyl-1 : 1′-dihydroxy-3 : 3′-dimethylnaphthalene, and its oxidation (COLLIE and WILSMORE), T., 298; P., **1896**, 47.
μ-Dimethylpenthiazoline, *γ*-bromo-, probable identity of, with dimethylallylthiocarbamide dibromide (DIXON), T., 854; P., **1896**, 100.
Dimethylprotocatechuic acid, existence of, in *Cratægus oxyacantha* (PERKIN and HUMMEL), T., 1571; P., **1896**, 186.
2 : 6-Dimethylpyridine-4 : 5-dicarboxylic acid from hydroxytrimethyl*iso*quinoline (COLLIE and WILSMORE), T., 303; P., **1896**, 47.
cis-αβ-Dimethylsuccinic acid from ethylic methylmalonate and ethylic *α*-bromopropionate (BONE and PERKIN), T., 262; P., **1896**, 64.
conversion of, into *trans*dimethylsuccinic acid (BONE and PERKIN), T., 264; P., **1896**, 64.
calcium salt (BONE and PERKIN), T., 261; P., **1896**, 64.
cis-αβ-Dimethylsuccinic anhydride from *cis-* and *trans*-modifications (BONE and PERKIN), T., 264; P., **1896**, 64.
trans-αβ-Dimethylsuccinic acid from ethylic methylmalonate and *α*-bromopropionate (BONE and PERKIN), T., 262; P., **1896**, 64.
and its ferric, copper, lead, silver, calcium salts (BONE and PERKIN), T., 260; P., **1896**, 64.
trans-αβ-Dimethylsuccinic anhydride (BONE and PERKIN), T., 266; P., **1896**, 64.

Dimethyl-*o*-toluidine, magnetic rotatory power, &c., of (PERKIN), T., 1108, 1138, 1156, 1211, 1233, 1245.
hydrochloride, magnetic rotatory power, &c., of (PERKIN), T., 1111, 1131, 1139, 1222, 1246.
Dimethyl-*p*-toluidine, magnetic rotatory power, &c., of (PERKIN), T., 1108, 1138, 1156, 1211, 1233, 1245.
hydrochloride, magnetic rotatory power, &c., of (PERKIN), T., 1111, 1131, 1139, 1222, 1246.
Dipentene, constitution of (TILDEN), T., 1014.
Diphenacyl. See Diphenylethylene diketone.
Diphenoxybutyric acid. See Diphenoxyethylacetic acid.
Diphenoxydiethylacetic acid (*diphenoxyhexoic acid*) and its salts (BENTLEY, HAWORTH, and PERKIN), T., 169; P., **1896**, 36; (PERKIN), T., 1502.
Diphenoxydiethylmalonic acid and its salts (BENTLEY, HAWORTH, and PERKIN), T., 169; P., **1896**, 36; (PERKIN), T., 1501.
action of heat on (BENTLEY, HAWORTH, and PERKIN), T., 169; P., **1896**, 36.
Diphenoxyethylacetic acid (*diphenoxybutyric acid*), action of hydrogen chloride in acetic acid on (BENTLEY, HAWORTH, and PERKIN), T., 170; P., **1896**, 36.
Diphenoxyhexoic acid. See Diphenoxydiethylacetic acid.
Diphenyl, magnetic rotatory power, &c., of (PERKIN), T., 1085, 1087, 1089, 1153, 1196, 1230, 1242.
p-amino-, composition of (HOFMANN LECTURE), T., 689.
Diphenylacetamidine, discovery of (HOFMANN LECTURE), T., 704.
Diphenylacetylglyceric acid (active), rotatory power of the methylic salt of (FRANKLAND and MACGREGOR), T., 111; P., **1896**, 10.
Diphenylallophanic acid, ethylic salt (HOFMANN LECTURE), T., 715.
Diphenylamine, discovery of (HOFMANN LECTURE), T., 615.
absorption of picric acid from aqueous solution by (WALKER and APPLEYARD), T., 1342; P., **1896**, 148.
Diphenylbenzamidine, discovery of (HOFMANN LECTURE), T., 705.
m-Diphenylbenzene, synthesis of, and its identity with *iso*diphenylbenzene (CHATTAWAY and EVANS), T., 982; P., **1896**, 114.
βγ-Diphenylbutyric acid, identity of, with pyroamaric acid (JAPP and LANDER), P., **1896**, 110.
s-Diphenylcarbamide (*carbanilide*), preparation of (HOFMANN LECTURE), T., 649, 652.
Diphenyldiethylenediamine, discovery of (HOFMANN LECTURE), T., 684.
Diphenylethylenediamine, discovery of (HOFMANN LECTURE), T., 685.
Diphenylformamidine (*diphenylmethenylamidine*) discovery of (HOFMANN LECTURE), T., 684, 705.
Diphenylfumaric acid, production of, from anhydracetonebenzilcarboxylic acid (JAPP and LANDER), P., **1896**, 109.
production of, from diphenyl*cyclo*pentenonylacetic acid (JAPP and MURRAY), P., **1896**, 147.
Diphenylguanidine (*melaniline*), preparation of: its salts and halogen derivatives (HOFMANN LECTURE), T., 650.
action of cyanogen on (HOFMANN LECTURE), T., 651.
*di*cyano- (HOFMANN LECTURE), T., 653.
*di*nitro- (HOFMANN LECTURE), T., 651, 695.
Diphenylhydroxy*cyclo*pentanonecarboxylic acid (JAPP and LANDER), P., **1896**, 109.
Diphenylic ethylenic ether (BENTLEY, HAWORTH, and PERKIN), T., 165.
methylenic ether (BENTLEY, HAWORTH, and PERKIN), T., 166, 167.
Diphenylmaleic acid, production of, from anhydracetonbenzilcarboxylic acid (JAPP and LANDER), P., **1896**, 109.
production of, from diphenyl*cyclo*pentenonylacetic acid (JAPP and MURRAY), P., **1896**, 147.
Diphenylmethane, magnetic rotatory power, &c., of (PERKIN), T., 1064, 1085, 1086, 1152, 1195, 1230, 1242.
Diphenyl*cyclo*pentane (JAPP and LANDER), P., **1896**, 108.
Diphenyl*cyclo*pentenone (JAPP and LANDER), P., **1896**, 108.
Diphenyl*cyclo*pentenonylacetic acid (JAPP and MURRAY), P., **1896**, 147.
s-Diphenylthiocarbamide, action of iodine on (HOFMANN LECTURE), T., 715.
Dipropionylglyceric acid, active, rotatory power of the methylic salt of (FRANKLAND and MACGREGOR), T., 116; P., **1896**, 10.
Dipropyl ketone, magnetic rotatory power and relative density of (PERKIN), T., 1063, 1172, 1236.

Disazo-compound, $C_{14}H_{12}N_4$, obtained from the product of the action of chloroform and potash on *m*-aminobenzoic acid (ELLIOTT), T., 1516; P., **1896**, 171.
Dissociation of carbon dioxide, effect in limiting the combustion of carbonic oxide of the (DIXON), T., 786; P., **1896**, 56.
o-Ditoluoyltartaric acid, rotatory power of the methylic and ethylic salts of (FRANKLAND and WHARTON), T., 1312, 1589; P., **1896**, 148.
m-Ditoluoyltartaric acid, rotatory power of the methylic and ethylic salts of (FRANKLAND and WHARTON), T., 1317; P., **1896**, 148.
p-Ditoluoyltartaric acid, rotatory power of the methylic and ethylic salts of (FRANKLAND and WHARTON), T., 1314; P., **1896**, 148.
Dyeing, chemical theory of (WALKER and APPLEYARD), T., 1341; P., **1896**, 148.
Dyes, acid compounds of yellow (PERKIN), T., 1440; P., **1896**, 167.
constitution of natural yellow (PERKIN), T., 1439; P., **1896**, 167.

E.

Elaboration, distinction between assimilation and (CROSS, BEVAN, and SMITH), T., 1605; P., **1896**, 174.
ELECTRICITY.
Conductivity of formanilide (EWAN), T., 96; P., **1896**, 8.
of sodium thioformanilide (EWAN), T., 97; P., **1896**, 8.
Pyroelectric properties of *cis*-π-camphanic acid (POPE), T., 973; P., **1896**, 116.
Electrolysis, Helmholtz's discoveries in (FITZGERALD), T., 900; P., **1896**, 25.
Electrolytic-dissociation, theory of (FITZGERALD), T., 906; P., **1896**, 25.
Ellagic acid, occurrence of, in *Quebracho colorado* (PERKIN and GUNNELL), T., 1307; P., **1896**, 158.
Eosin. See Fluorescein, tetrabromo-.
Equilibrium between alkylammonium cyanates and the corresponding carbamides (WALKER and APPLEYARD), T., 193; P., **1896**, 12.
between diphenylamine, picric acid, and water (WALKER and APPLEYARD), T., 1342; P., **1896**, 148.
between picric acid dissolved in water and absorbed by silk (WALKER and APPLEYARD), T., 1339; P., **1896**, 147.
Ethanetetracarboxylic acid, ethylic salt (PERKIN and THORPE), T., 1485.
Ethenyl-*o*-aminothiophenol amyliodide, colouring matter obtained from (HOFMANN LECTURE), T., 714.
Ethoxyacetic acid, copper and sodium salts, electrolysis of (WALKER), T., 1278, 1279.
μ-Ethoxypenthiazoline, γ-bromo- (DIXON), T., 31; P., **1895**, 217.
Ethylamine, discovery of (HOFMANN LECTURE), T., 656.
action of nitrous acid on (HOFMANN LECTURE), T., 698.
Ethylanhydrodibenzilacetoacetic acid and its potassium, silver, and barium salts (JAPP and LANDER), T., 739; P., **1895**, 146.
ethylic salt of (JAPP and LANDER), T., 738; P., **1895**, 146.
reduction of (JAPP and LANDER), T., 743; P., **1895**, 146.
Ethylaniline (HOFMANN LECTURE), T., 598.
discovery of (HOFMANN LECTURE), T., 660.
magnetic rotatory power, &c., of (PERKIN), T., 1099, 1208, 1244.
o-nitro- (MELDOLA and STREATFEILD), P., **1896**, 51.
Ethylbenzene, magnetic rotatory power, &c., of (PERKIN), T., 1079, 1082, 1083, 1094, 1096, 1192, 1241.
Ethylene, explosive mixtures of air and (CLOWES), P., **1895**, 201.
Ethylene, *tri*brom- (HAWORTH and PERKIN), T., 177.
Ethylenediamine (HOFMANN LECTURE), T., 684.
Ethylenic dibromide, action of potassium carbonate on (HAWORTH and PERKIN), T., 175; P., **1896**, 37.
action of sodium phenoxide on (BENTLEY, HAWORTH, and PERKIN), T., 165.
dichloride, magnetic rotatory power and relative density of (PERKIN), T., 1063, 1173, 1237.
chlorobromide, action of sodium phenoxide on (BENTLEY, HAWORTH, and PERKIN), T., 165.
Ethylic alcohol, action of light on (RICHARDSON and FORTEY), T., 1351; P., **1896**, 164.
action of hydrogen chloride on (CAIN), P., **1896**, 12.
Ethylic ether, action of light on (RICHARDSON and FORTEY), T., 1352; P., **1896**, 165.

Ethylic iodide, magnetic rotatory power and relative density of (Perkin), T., 1063, 1173, 1237.
Ethylmauveine, discovery of (Hofmann Lecture), T., 618.
Ethylmesitylene. See 1 : 3 : 5 : 2-Trimethylethylbenzene.
Ethylpropyl*iso*butylammonium chloride, optically active (Hofmann Lecture), T., 671.
Ethyl*iso*propyl*iso*butylphosphine and its methiodide (Hofmann Lecture), T., 682.
Ethyl-α-thiocarbonic acid, potassium salt of (Doran), T., 341.
Ethyltriethylphosphonium bromide, brom-, preparation of (Hofmann Lecture), T., 678.
action of trimethylamine and triethylamine on (Hofmann Lecture), T., 679.
Eugenol, magnetic rotatory power, &c., of (Perkin), T., 1127, 1142, 1247.
iso-Eugenol, magnetic rotatory power, &c., of (Perkin), T., 1127, 1147, 1247.
Euxanthone, non-formation of acid compounds of (Perkin), T., 1440; P., **1896**, 167.
Explosion of mixtures of cyanogen, oxygen, and nitrogen, rate of (Dixon, Strange, and Graham), T., 761; P., **1896**, 53.
wave in chlorine peroxide, rate of the (Dixon and Harker), T., 791; P., **1896**, 57.
Explosive mixtures of gases with air (Clowes), P., **1895**, 201.

F.

Fermentation of furfuroids by yeast (Cross, Bevan, and Smith), T., 816; P., **1896**, 96.
of furfuroids from barley straw by yeast (Cross, Bevan, and Smith), T., 1607; P., **1896**, 174.
Fisetin, identity of, with colouring matter of *Querbracho colorado* (Perkin and Gunnell), T., 1306; P., **1896**, 158.
acetyl and benzoyl derivatives of (Perkin and Gunnell), T., 1305; P., **1896**, 158.
Flames, structure of hydrocarbon (Lewes), T., 235; P., **1896**, 2; (Smithells), P., **1896**, 3.
of hydrocarbons, cause of the luminosity of (Smithells), P., **1896**, 3.
Flames, acetylene theory of the luminosity of hydrocarbon (Lewes), T., 226; P., **1896**, 1; (Smithells), P., **1896**, 3.
temperature of certain (Lewes), T., 228; P., **1896**, 2; (Hartley), T., 842–844; P., **1896**, 98; (Harcourt, Thorpe, Rücker, Smithells), P., **1896**, 3–5.
of cyanogen and carbonic oxide undergoing explosive combustion, duration of the (Dixon, Strange, and Graham), T., 763; P., **1896**, 54.
Flavopurpurin, discovery of (Hofmann Lecture), T., 633.
Fluorene, oxidation of (Hodgkinson), P., **1896**, 110.
Fluorescein, *tetra*bromo-, (*eosin*), composition of (Hofmann Lecture), T., 625.
Formaldehyde, discovery of (Hofmann Lecture), T., 706.
occurrence of a condensation product of pentose with, in cellulose (Cross, Bevan, and Smith), T., 813; P., **1896**, 96.
hydrazone of (Walker), T., 1279.
action of phenylhydrazine on (Walker), T., 1280.
Formaldehyde, *tri*thio-, preparation of (Hofmann Lecture), T., 707.
Formanilide, preparation of (Luxmoore), T., 190; P., **1895**, 149.
electrical conductivity of solutions of (Ewan), T., 96; P., **1896**, 8.
magnetic rotatory power, &c., of (Perkin), T., 1114, 1216, 1246.
action of caustic soda on (Hofmann Lecture), T., 704.
sodium ethoxide (Cohen and Archdeacon), T., 94; P., **1896**, 8.
Formaniiide, thio-, preparation of (Hofmann Lecture), T., 710.
electrical conductivity of the sodium salt of (Ewan), T., 97; P., **1896**, 8.
Formic acid, condensation of, with pentoses (Cross, Bevan, and Smith), T., 813; P., **1896**, 96.
amylic salt, molecular volume of, in organic solvents (Nicol), T., 143; P., **1895**, 237.
ethylic salt, molecular volume of, in organic solvents (Nicol), T., 143; P., **1895**, 237.
Formophenylhydrazide, disodium derivative of (Cohen and Archdeacon), T., 95; P., **1896**, 8.
French purple, discovery of (Hofmann Lecture), T., 608.
Fructose. See Levulose.
Fuchsine. See Rosaniline.

Fumaric acid, chloro-, action of hydrazine and phenylhydrazine on (Ruhemann), T., 1396; P., **1896**, 166.
ethylic salt, condensation of, with ethylic acetoacetate (Ruhemann and Tyler), T., 532; P., **1896**, 73.
condensation of, with ethylic benzoylacetate (Ruhemann and Wolff), T., 1384; P., **1896**, 166.
condensation of, with ethylic methylacetoacetate (Ruhemann and Wolff), T., 1386; P., **1896**, 166.
Furfuraldehyde, percentage of, in cellulose, and soluble products of cellulose (Cross, Bevan, and Smith), T., 807; P., **1896**, 96.
Furfuroids, condition of, at different stages of plant (Cross, Bevan, and Smith), T., 1609; P., **1896**, 175.
relation of, to total carbohydrates from barley straw (Cross, Bevan, and Smith), T., 1606; P., **1896**, 174.
oxidation of, by bromine (Cross, Bevan, and Smith), T., 815; P., **1896**, 96.
fermentation of, by yeast (Cross, Bevan, and Smith), T., 816; P., **1896**, 96.
osazones and yeast, fermentation of, from barley straw (Cross, Bevan, and Smith), T., 1607; P., **1896**, 174.
reaction of, with hydrogen peroxide (Cross, Bevan, and Smith), T., 1607; P., **1896**, 174.
estimation of, in plants (Cross, Bevan, and Smith), T., 1604; P., **1896**, 174.
separation of, from cellulose by acid hydrolysis (Cross, Bevan, and Smith), T., 806; P., **1896**, 96.

G.

Galactose, reducing power of, on ammoniacal silver nitrate (Henderson), T., 152; P., **1896**, 9.
Gallic acid, occurrence of, in *Quebracho colorado* (Perkin and Gunnell), T., 1307; P., **1896**, 158.
occurrence of, in sumach (Perkin and Allen), T., 1302; P., **1896**, 157.
Gas, coal-, explosive mixtures of air and (Clowes), P., **1895**, 201.
Gases, effect of electric sparks on (Hofmann Lecture), T., 727.
liquefaction of (Dewar), P., **1895**, 221.
combination of, in equal volumes (Dixon), T., 780; P., **1896**, 56.
Gentisin, non-formation of acid compounds of (Perkin), T., 1440; P., **1896**, 167.
d-Glucose (*dextrose*), identity of, from different sources (O'Sullivan and Stern), T., 1691; P., **1896**, 218.
synthesis of (Hofmann Lecture), T., 707.
specific rotatory power of, from different sources (O'Sullivan and Stern), T., 1695; P., **1896**, 218.
specific gravity of aqueous solutions of, from different sources (O'Sullivan and Stern), T., 1693; P., **1896**, 218.
cupric reducing power of, from different sources (O'Sullivan and Stern), T., 1696; P., **1896**, 218.
reducing power of, on ammoniacal silver nitrate (Henderson), T., 145; P., **1896**, 9.
Glucosides, existence of colouring matters as (Perkin and Hummel), T., 1572; P., **1896**, 186.
Glycocine (*aminoacetic acid*), constitution of (Sakurai), P., **1896**, 38.
Glycol, preparation of (Haworth and Perkin), T., 175; P., **1896**, 37.
chlorhydrin, action of sodium ethoxide and phenol on (Bentley, Haworth, and Perkin), T., 164.
monophenyl ether (Bentley, Haworth, and Perkin), T., 164.
Glycollic acid, sodium salt, electrolysis of (Walker), T., 1278.
Gold-alloys with silver, solubility of, in potassium cyanide solutions (Maclaurin), T., 1276; P., **1896**, 149.
Gold, double sulphides of silver, lead, iron, copper, and (Maclaurin), T., 1269; P., **1896**, 149.
Guaiacol, magnetic rotatory power, &c., of (Perkin), T., 1127, 1135, 1188, 1240.
p-nitro- [OH : OMe : NO_2 = 1 : 2 : 4] (Meldola), P., **1896**, 125—127.
*di*nitro- [OH : OMe : $(NO_2)_2$ = 1 : 2 : 4 : 6] (Meldola, Woolcott, and Wray), T., 1331.
nitramino- [OH : OMe : NO_2 : NH_2 = 1 : 2 : 4 : 6], and its acetyl derivatives (Meldola, Woolcott, and Wray), T., 1331; P., **1896**, 164.

Guanidine, preparation of (HOFMANN LECTURE), T., 715.

H.

Hawthorn blossom, colouring matter of white (PERKIN and HUMMEL), T., 1570; P., **1896**, 186.

HEAT :—

Boiling points, apparatus for determining (PERKIN), T., 1041; P., **1896**, 122.

of organic substances (PERKIN), T., 1247.

Freezing points of solutions of active ethylic diacetylglycerate in acetic acid and in benzene (FRANKLAND and PICKARD), T., 134, 135; P., **1896**, 11.

of solutions of active and inactive methylic dibenzoylglycerates in acetic acid, benzene, nitro-benzene, and ethylenic dibromide (FRANKLAND and PICKARD), T., 125, 127, 129, 131, 132; P., **1896**, 11.

Temperature of certain flames (HARTLEY), T., 844; P., **1896**, 98.

Temperatures, low (DEWAR), P., **1895**, 221.

Thermodynamics, applications of, to chemistry (FITZGERALD), T., 895; P., **1896**, 25.

Helmholtz memorial lecture (FITZGERALD), T., 885; P., **1896**, 25.

discussion on (HARCOURT, LISTER, FRANKLAND, RAYLEIGH, ROSCOE, ARMSTRONG, POYNTING), P., **1896**, 26.

Hemimellitic acid (1 : 2 : 3-*benzenetricarboxylic acid*) from methylpurpuroxanthin (SCHUNCK and MARCHLEWSKI), T., 70; P., **1895**, 203.

Hemp, Indian, charas, the resin of (WOOD, SPIVEY, and EASTERFIELD), T., 539; P., **1896**, 76.

Heptane, magnetic rotatory power and relative density of (PERKIN), T., 1063, 1172, 1236.

Heptoic acid (*œnanthoic acid*) magnetic rotatory power and relative density of (PERKIN), T., 1063, 1172, 1236.

ethylic salt, magnetic rotatory power and relative density of (PERKIN), T., 1063, 1172, 1236.

phenylic salt, magnetic rotatory power, &c., of (PERKIN), T., 1064, 1075, 1076, 1078, 1180, 1239.

Hexabenzoylmyricetin, preparation and properties of (PERKIN and HUMMEL), T., 1291; P., **1896**, 145.

Hexacetylmyricetin, preparation and properties of (PERKIN and HUMMEL), T., 1291; P., **1896**, 145.

Hexamethoxyrosolic acid, constitution of (HOFMANN LECTURE), T., 627.

Hexamethylbenzene, preparation of (HOFMANN LECTURE), T., 721.

Hexane, normal, from light petroleum (THOMAS and YOUNG), P., **1895**, 172.

normal, physical constants of (THOMAS and YOUNG), P., **1895**, 174.

HEXANETRICARBOXYLIC ACID :—*α-iso*-Propylpropane-$\alpha\alpha_1\alpha_1$-tricarboxylic acid, and salts (PERKIN), T., 1492, 1493; P., **1896**, 170, 154; (HEINKE and PERKIN), T., 1507; P., **1896**, 155.

action of heat on (PERKIN), T., 1495.

ethylic salt (PERKIN), T., 1490, 1491; P., **1896**, 170, 154; (HEINKE and PERKIN), T., 1507; P., **1896**, 155.

action of alcoholic potash on (HEINKE and PERKIN), T., 1507; P., **1896**, 155.

sodio-, action of phenoxyethylic bromide on (PERKIN), T., 1504; P., **1896**, 170.

HEXENOIC ACIDS :—

iso-Propylacrylic acid and trimethylacrylic acid, preparation of the mixed ethereal salts of (PERKIN), T., 1488; P., **1896**, 170, 154.

ethylic salt, action of ethylic sodiomalonate on (PERKIN), T., 1490; P., **1896**, 170, 154.

Trimethylacrylic acid (PERKIN), T., 1478; P., **1896**, 170, 154; (PERKIN and THORPE), T., 1485; P., **1896**, 157.

action of bromine on (PERKIN), T., 1480; P., **1896**, 154; (PERKIN and THORPE), P., **1896**, 157.

action of hydrobromic and hydriodic acids on (PERKIN), T., 1481; P., **1896**, 154.

action of phosphorus trichloride on (PERKIN), T., 1480.

ethylic salt, action of ethylic malonate on (PERKIN), T., 1495.

anilide of (PERKIN), T., 1480.

chloride of and action of aniline on (PERKIN), T., 1480.

Hexethylethylenediphosphonium dibromide, preparation of (HOFMANN LECTURE), T., 678.

dichloride, preparation of (HOFMANN LECTURE), T., 680.

diiodide and dihydrate, action of heat on (HOFMANN LECTURE), T., 678.

Hexoic acids :—
αββ-Trimethylpropionic acid (*α-methylisopropylacetic acid, α-methylisovaleric acid*) (Perkin), T., 1476.
action of heat on (Perkin), T., 1477.
action of bromine and phosphorus pentabromide on (Perkin), T., 1478.
αββ-Trimethylpropionic acid
α-bromo-, ethylic salt (Perkin), T., 1478.
action of alcoholic potash on (Perkin), T., 1478, 1485, 1486; P., **1896**, 170.
action of ethylic sodiomalonate on (Perkin and Thorpe), T., 1485, 1498.
action of quinoline on (Perkin), T., 1489; P., **1896**, 170, 154.
β-bromo- (Perkin), T., 1481; P., **1896**, 170, 154; (Perkin and Thorpe), T., 1484; P., **1896**, 156.
ethylic salt (Perkin and Thorpe), T., 1484.
action of alcoholic potash on (Perkin), T., 1478, 1485, 1486; P., **1896**, 170.
action of ethylic sodiomalonate on (Perkin), T., 1485, 1498.
hydrolysis of (Perkin and Thorpe), P., **1896**, 157.
*di*bromo- (Perkin), T., 1480; P., **1896**, 170, 154; (Perkin and Thorpe), P., **1896**, 157.
β-iodo- (Perkin), T., 1481; P., **1896**, 170, 154; (Perkin and Thorpe), T., 1485; P., **1896**, 157.
ethylic salt (Perkin and Thorpe), T., 1485.
Hexose, change of, to pentose derivatives in cereal celluloses (Cross, Bevan, and Smith), T., 1609; P., **1896**, 175.
formation of a pentose monoformal from, in plants (Cross, Bevan, and Smith), T., 1610; P., **1896**, 175.
Hofmann memorial lectures (Playfair, Abel, Perkin, Armstrong), T., 575; P., **1893**, 133.
Hofmann-violet, green dye obtained from (Hofmann Lecture), T., 622.
Homopyrocatechol, magnetic rotatory power, &c., of (Perkin), T., 1135, 1183, 1239.
Hydracetylacetone, magnetic rotatory power and relative density of (Perkin), T., 1063, 1172, 1237.
Hydrazine, formation of, by reduction of nitrososulphates (Divers and Haga), T., 1613; P., **1896**, 179.
Hydrazobenzene, discovery of (Hofmann Lecture), T., 689.
Hydrindene, magnetic rotatory power, &c., of (Perkin), T., 1083, 1144, 1153, 1196, 1197, 1229, 1242.
Hydrindone, magnetic rotatory power, &c., of (Perkin), T., 1093, 1201, 1243.
α-Hydrindone, action of bromine on (Revis and Kipping), P., **1895**, 214.
*di*bromo- (Revis and Kipping), P., **1895**, 214.
action of alcoholic potash on (Revis and Kipping), P., **1895**, 214.
iso-Hydrobenzoin, from the electrolysis of potassium mandelate (Walker), T., 1279.
Hydrocarbon, $C_{15}H_{22}$, from santalal (Chapman and Burgess), P., **1896**, 140.
$C_{20}H_{60}$, from Charas (Wood, Spivey, and Easterfield), T., 543; P., **1896**, 76.
Hydrocarbons in coal-tar (Hofmann Lecture), T., 693.
Hydrogen, liquefaction of (Dewar), P., **1895**, 229; (Ramsay), P., **1895**, 231.
direct union of, with carbon (Bone and Jordan), P., **1896**, 61.
explosive mixtures of air and (Clowes), P., **1895**, 201.
Hydrogen peroxide, production of, during oxidation (Dixon), T., 779; P., **1896**, 56.
formation of, from ether by action of light (Richardson and Fortey), T., 1352; P., **1896**, 165.
formation of, from certain organic substances by action of light (Richardson and Fortey), T., 1349; P., **1896**, 164, 165.
reaction of furfuroids with (Cross, Bevan, and Smith), T., 1607; P., **1896**, 174.
oxidation of pentoses by (Cross, Bevan, and Smith), T., 815; P., **1896**, 96.
Hydrolapachol, chlor- (Hooker), T., 1361.
1-Hydroxy-1′-acetonyl-3 : 3′-dimethyl-*iso*quinoline, hydrochloride, platinochloride (Collie and Wilsmore), T., 301; P., **1896**, 47.
ω-Hydroxy-*cis*-π-camphanic acid and its acetyl derivative (Kipping), T., 947; P., **1896**, 115.
π-Hydroxycamphoric acid, barium salt, acetyl derivative of the anhydride (Kipping), T., 938; P., **1896**, 115.

π-Hydroxycamphoric acid, oxidation of (KIPPING), P., **1895**, 211.
w-Hydroxycamphotricarboxylic acid, isomeric lactones, silver salt (KIPPING), T., 961; P., **1896**, 115.
Hydroxydibromocamphorsulphonic acid: its bromide and lactone (LAPWORTH and KIPPING), P., **1896**, 78.
αββ-Hydroxydiphenylbutyric acid (*isophenethylmandelic acid*) (JAPP and LANDER), P., **1896**, 108.
γ-Hydroxy-βγ-diphenylbutyric acid (JAPP and LANDER), P., **1896**, 110.
1-Hydroxy-1 : 2-diphenyl*cyclo*pentan-4-one (JAPP and LANDER), P., **1896**, 107.
2-Hydroxy-2 : 3-diphenyl*cyclo*penten-onylacetic acids, α- and β- (JAPP and MURRAY), P., **1896**, 147.
2-Hydroxy-2 : 3-diphenyl*cyclo*penten-onylacetic acid, β-lactone of (JAPP and MURRAY), P., **1896**, 147.
Hydroxyethyltriethylphosphonium hydroxide, preparation of (HOFMANN LECTURE), T., 678.
HYDROXYHEXOIC ACIDS :—
β-Hydroxy-αββ-trimethylpropionic acid (*hydroxy-α-methylisovaleric acid*) (PERKIN and THORPE), T., 1482, 1486, 1487; P., **1896**, 156.
action of hydriodic and hydrobromic acids on (PERKIN), T., 1487; (PERKIN and THORPE), T., 1484, 1485.
salts of (PERKIN and THORPE), T., 1486, 1487.
ethylic salt (PERKIN and THORPE), T., 1482; P., **1896**, 156.
Hydroxyhydrolapachol (HOOKER), T., 1361.
Hydroxylamine, formation of, by reduction of nitrites (DIVERS and HAGA), T., 1612; P., **1896**, 179.
action of hydrogen iodide on (DUNSTAN and GOULDING), T., 840, 841; P., **1896**, 73.
amidosulphonate (DIVERS and HAGA), T., 1647.
comparison of hydriodides and hydrochlorides of (DUNSTAN and GOULDING), T., 841, 842.
Hydroxylamine sulphate, preparation of (DIVERS and HAGA), T., 1665; P., **1896**, 178.
action of metallic iodides on (DUNSTAN and GOULDING), T., 840.
Hydroxy-*iso*-lapachol, preparation of (HOOKER), T., 1368, 1375.
Hydroxy-α-lapachone, synthesis of (HOOKER), T., 1370, 1372.
Hydroxy-β-lapachone, formation of (HOOKER), T., 1381.
preparation of (HOOKER), T., 1368.
5 : 2-Hydroxymethylcoumalin (RUHEMANN and WOLFF), T., 1388.
5 : 1-Hydroxymethyldihydropyridone-3 : 4-dicarboxylic acid, amide of monethylic salt (RUHEMANN and TYLER), T., 533; P., **1896**, 73.
2 : 3-Hydroxynaphthoic acid, constitution of, in relation to colour (ARMSTRONG), P., **1896**, 42.
etherification of (ARMSTRONG), P., **1896**, 43.
γ-Hydroxy-β-phenoxyethylbutyric acid (BENTLEY, HAWORTH, and PERKIN), T., 170; P., **1896**, 36.
ab-p-Hydroxyphenylcarboxyethylthiocarbamide (DORAN), T., 329; P., **1896**, 74.
β-Hydroxy-ααβ-trimethyladipic acid (PERKIN and THORPE), P., **1896**, 156.
β-Hydroxy-ααβ-trimethyladipic acid, lactone of (PERKIN and THORPE), P., **1896**, 156.
α-Hydroxy-αββ-trimethylglutaric acid, ethylic salt (PERKIN and THORPE), P., **1896**, 156.
β-Hydroxy-ααβ-trimethylglutaric acid, action of the bromides of phosphorus on (PERKIN and THORPE), P., **1896**, 156.
ethylic salt (PERKIN and THORPE), P., **1896**, 156.
1-Hydroxy-1′ : 3′ : 3-trimethyl*iso*quinoline: its hydrochloride; oxidation of (COLLIE and WILSMORE), T., 302; P., **1896**, 47.

I.

Indene, magnetic rotatory power, &c., of (PERKIN), T., 1083, 1144, 1153, 1196, 1197, 1230, 1242.
Induline, discovery of (HOFMANN LECTURE), T., 622.
Inversion, mechanism of (ARMSTRONG), P., **1896**, 46.
Iodine, reaction of, with dilute ammonia solution (CHATTAWAY), T., 1577; P., **1896**, 173.
Iron, double sulphide of gold and (MACLAURIN), T., 1274; P., **1896**, 149.
Ferric amidosulphonate (DIVERS and HAGA), T., 1647.
chloride, hydrated, absorption of moisture by (HAKE), P., **1896**, 34.

Iron:—
Ferrous amidosulphonates (DIVERS and HAGA), T., 1647.
aluminium sulphate, occurrence of, on bricks exposed to sulphurous anhydride (PATERSON), T., 66; P., **1895**, 203.
cæsium sulphate, density and optical behaviour of (TUTTON), T., 396.
potassium sulphate, density and optical behaviour of (TUTTON), T., 387.
rubidium sulphate, density and optical behaviour of (TUTTON), T., 391.
Isatin, action of nitrous acid on (HOFMANN LECTURE), T., 699.
nitration of (HOFMANN LECTURE), T., 647.
Isomerism, position, influence of, on optical activity (FRANKLAND and WHARTON), T., 1583; P., **1896**, 186.
effect of, on rotatory power (FRANKLAND and WHARTON), T., 1320; P., **1896**, 148.
Isonitriles, alkylic, preparation of (HOFMANN LECTURE), T., 663.

K.

Ketone-group of natural dye stuffs (PERKIN), T., 1440; P., **1896**, 167.
Ketopinic acid, its methylic, barium, and calcium salts, hydrazone, and oxime (ARMSTRONG), P., **1896**, 167; T., 1401.
Kinoin, non-formation of acid compounds of (PERKIN), T., 1440; P., **1896**, 167.
Knaresborough dropping well, analysis of water of (BURRELL), T., 536; P., **1896**, 73.

L.

Lactic acid, sodium salt, electrolysis of (WALKER), T., 1278.
d-Lactic acid, conversion of, into lævolactic acid (PURDIE and WILLIAMSON), T., 837; P., **1896**, 97.
specific rotation of the ethylic salt of (PURDIE and WILLIAMSON), T., 827; P., **1896**, 97.
Lactone, $C_{10}H_{14}O_3$, from dibromocampholide, and its bromo-derivative (FORSTER), T., 43; P., **1895**, 208.
Lactonic acid, $C_4H_2O_5$, from dihydroxymaleic acid and hydrogen bromide in presence of acetic acid (FENTON), T., 559.
Lactose (*milk sugar*), reducing power of, on ammoniacal silver nitrate (HENDERSON), T., 152; P., **1896**, 9.
α-Lapachan, preparation of (HOOKER), T., 1365.
β-Lapachan, preparation of, and its picrate (HOOKER), T., 1365.
Lapachol, constitution of (HOOKER), T., 1355; P., **1896**, 166.
iso-β-Lapachol, constitution of (HOOKER), T., 1357, 1363.
synthesis of, and its acetate (HOOKER), T., 1362.
bromide (HOOKER), T., 1360, 1379.
Lapachone (HOOKER), T., 1361.
α-Lapachone, reduction of (HOOKER), T., 1366.
β-Lapachone, reduction of (HOOKER), T., 1367.
bromo- (HOOKER), T., 1361.
iso-Lapachone (HOOKER), T., 1362.
Laurolene from potassium alloethylic camphorate (WALKER and HENDERSON), T., 750; P., **1896**, 110.
Lauronolic acid, constitution of (WALKER and HENDERSON), T., 758.
Lead, rate of diffusion of, in mercury (HUMPHREYS), T., 250; P., **1896**, 9.
Lead alloys with tin and cadmium, solution and diffusion of, in mercury (HUMPHREYS), T., 1681; P., **1896**, 220.
Lead salts, list of quadrivalent (HUTCHINSON and POLLARD), T., 225.
Lead *tetra*chloride (HUTCHINSON and POLLARD), T., 218.
imidosulphonates (DIVERS and HAGA), T., 1626.
Lead oxides:—
Red lead, action of glacial acetic acid on (HUTCHINSON and POLLARD), T., 213; P., **1896**, 31.
Lead tetraphosphate (HUTCHINSON and POLLARD), T., 221; P., **1896**, 31.
Lead, double sulphide of gold with (MACLAURIN), T., 1273; P., **1896**, 149.
Lecture experiment: with ozone, apparatus for (NEWTH), T., 1298; P., **1896**, 139.
Lectures, memorial: Helmholtz (FITZGERALD), T., 885; P., **1896**, 26.
Hofmann (ABEL, ARMSTRONG, PERKIN, PLAYFAIR), T., 575; P., **1893**, 133.
Lothar Meyer (BEDSON), T., 1403; P., **1896**, 119.
Leucaniline, preparation of (HOFMANN LECTURE), T., 613.

Levulinic acid (*β-acetylpropionic acid, acetonylacetic acid*), condensation of, with benzil (JAPP and MURRAY), P., **1896**, 146.
ethylic salt, action of ethylic bromisobutyrate on (PERKIN and THORPE), P., **1896**, 156.
Levulose (*fructose*), reducing power of, on ammoniacal silver nitrate (HENDERSON), T., 152; P., **1896**, 9.
Light, action of, on mercurous acetate (HADA), T., 1674; P., **1896**, 183.
dissociation of mercurous nitrate by (HADA), T., 1668; P., **1896**, 183.
action of, on mercurous sulphate (HADA), T., 1673; P., **1896**, 183.
action of, on ethylic ether (RICHARDSON and FORTEY), T., 1352; P., **1896**, 165.
action of, on amylic alcohol, &c. (RICHARDSON and FORTEY), T., 1349; P., **1896**, 164.
LIGHT:—
Colour, origin of (ARMSTRONG), P., **1896**, 42.
Dispersion, molecular, of the double sulphates of potassium, rubidium, and cæsium (TUTTON), T., 476; P., **1896**, 70.
Magnetic rotatory power, apparatus for determining (PERKIN), T., 1027; P., **1896**, 122.
effect of temperature on (PERKIN), T., 1058; P., **1896**, 122.
of organic substances, chiefly aromatic (PERKIN), T., 1026; P., **1896**, 122.
of mixtures (PERKIN), T., 1052; P., **1896**, 122.
Optical behaviour of the sulphates containing potassium, rubidium, and cæsium, influence of atomic weight on the (TUTTON), T., 499; P., **1896**, 71.
Optically active compounds, inversion of (ARMSTRONG), P., **1896**, 46.
Phosphorescence produced by Röntgen rays (JACKSON), P., **1896**, 58.
Refraction equivalents of acetylacetone at different temperatures (PERKIN), T., 2; P., **1895**, 199.
of *o*-toluidine at different temperatures (PERKIN), T., 4; P., **1895**, 199.
of *p*-toluidine at different temperatures (PERKIN), T., 4; P., **1895**, 199.
Refraction, molecular, of crystalline salts, additive nature of (POPE), T., 1530; P., **1896**, 178.
LIGHT:—
Refraction, molecular, of substances in the solid and liquid states compared (POPE), T., 1533; P., **1896**, 178.
of the double sulphates of potassium, rubidium, and cæsium (TUTTON), T., 476, 503; P., **1896**, 70.
Refractive index, mean, of anisotropic crystals (POPE), T., 1530; P., **1896**, 177.
Refractive indices of the double sulphates of potassium, rubidium, and cæsium (TUTTON), T., 463; P., **1896**, 69.
Röntgen rays, methods of producing, and nature of (JACKSON), P., **1896**, 58.
influence of the, on chemical changes (DIXON and BAKER), T., 1308; P., **1896**, 160.
influence of the, on the combination of carbonic oxide and oxygen (DIXON), T., 788; P., **1896**, 56.
Rotatory power of substances in the crystalline and amorphous condition (POPE), T., 971; P., **1896**, 116.
influence of position isomerism on (FRANKLAND and WHARTON), T., 1583; P., **1896**, 186.
of aspartic acid (MARSHALL), T., 1022; P., **1896**, 146.
of crystals of hydrated *trans*-camphotricarboxylic acid (POPE), T., 978; P., **1896**, 116.
of ethylic diacetylglycerate dissolved in acetic acid (FRANKLAND and PICKARD), T., 136; P., **1896**, 11.
of ethylic diacetylglycerate dissolved in benzene (FRANKLAND and PICKARD), T., 135; P., **1896**, 11.
of methylic and ethylic monobenzoylglycerates at different temperatures (FRANKLAND and MACGREGOR), T., 112; P., **1896**, 10.
of methylic dibenzoylglycerate dissolved in acetic acid (FRANKLAND and PICKARD), T., 133; P., **1896**, 11.
of methylic dibenzoylglycerate dissolved in benzene (FRANKLAND and PICKARD), T., 127; P., **1896**, 11.
of methylic dibenzoylglycerate dissolved in ethylene dibromide (FRANKLAND and PICKARD), T., 130; P., **1896**, 11.

LIGHT:—
Rotatory power of methylic dibenzoylglycerate dissolved in nitrobenzene (FRANKLAND and PICKARD), T., 131; P., **1896**, 11.
of methylic and ethylic dibenzoyltartrates (FRANKLAND and WHARTON), T., 1585; P., **1896**, 186.
of methylic diphenylacetylglycerate at different temperatures (FRANKLAND and MACGREGOR), T., 111; P., **1896**, 10.
of methylic dipropionylglycerate at different temperatures (FRANKLAND and MACGREGOR), T., 116; P., **1896**, 10.
of methylic, ethylic, and propylic dibenzoylglycerates at different temperatures (FRANKLAND and MACGREGOR), T., 104; P., **1896**, 9.
of the methylic and ethylic salts of *o*-, *m*-, and *p*-ditoluoyltartaric acids (FRANKLAND and WHARTON), T., 1309, 1589; P., **1896**, 148.
Specific rotatory power, influence of solvents on, and of ring formation on (FORSTER), T., 40.
of ethylic acetyl-*d*-lactate (PURDIE and WILLIAMSON), T., 828; P., **1896**, 97.
of ethylic acetylmalate (PURDIE and WILLIAMSON), T., 824; P., **1896**, 97.
of ethylic butyrylmalate (PURDIE and WILLIAMSON), T., 825.
of ethylic dextrochloropropionate (PURDIE and WILLIAMSON), T., 829; P., **1896**, 97.
of ethylic *d*-lactate (PURDIE and WILLIAMSON), T., 827; P., **1896**, 97.
of malic acid and its potassium salt (PURDIE and WILLIAMSON), T., 822.
of the methylic, ethylic, propylic, isopropylic, normal butylic, and isobutylic salts of malic acid (PURDIE and WILLIAMSON), T., 823; P., **1896**, 97.
Spectrum of the flame of cyanogen (LEWES), T., 240; P., **1896**, 2.
of a candle flame (HARTLEY), T., 845.
Velocity of light along the axes of the optical ellipsoid of double sulphates of potassium, rubidium, and cæsium (TUTTON), T., 466; P., **1896**, 69.
Lithium chloride, absorption of moisture by (HAKE), P., **1896**, 34.
Lomatiol, constitution of (HOOKER), T., 1369, 1381.
Luteolin, the colouring matter of weld (PERKIN), T., 206; P., **1896**, 37.
preparation of, from weld extract (PERKIN), T., 207.
preparation and properties of compounds of, with mineral acids (PERKIN), T., 208.
constitution of (PERKIN), T., 212, 799; P., **1896**, 37, 105.
relation of, to quercetin (PERKIN), T., 803; P., **1896**, 105.
decomposition of, with fused alkalis (PERKIN), T., 210, 801; P., **1896**, 37, 105.
tetracetyl and tetrabenzoyl derivatives of (PERKIN), T., 210; P., **1896**, 37.
triethyl ether and its acetyl derivative (PERKIN), T., 800; P., **1896**, 105.
decomposition of, with alcoholic potash (PERKIN), T., 802; P., **1896**, 105.
hydriodide, analysis of (PERKIN), T., 1442; P., **1896**, 167.
Luteolin, bromo-, preparation and properties of (PERKIN), T., 209; P., **1896**, 37.
acetyl derivative of (PERKIN), T., 210; P., **1896**, 37.

M.

Maclura tinctoria, morin, the colouring matter of (PERKIN and BABLICH), T., 792; P., **1896**, 106.
Magnesium, solution and diffusion of, in mercury (HUMPHREYS), T., 1680; P., **1896**, 220.
chloride, absorption of moisture by (HAKE), P., **1896**, 34.
nitrate, absorption of moisture by (HAKE), P., **1896**, 34.
cæsium sulphate, density and optical behaviour of (TUTTON), T., 366.
potassium sulphate, optical behaviour of (TUTTON), T., 356.
density of (TUTTON), T., 355.
rubidium sulphate, density and optical behaviour of (TUTTON), T., 361.
Maleic acid, chloro-, ethylic salt, behaviour of, towards ethylic acetoacetate (RUHEMANN and TYLER), T., 535.

Malic acid and its potassium salt, specific rotation of (PURDIE and WILLIAMSON), T., 822.
action of isopropylic iodide on the silver salt of (PURDIE and WILLIAMSON), T., 825.
methylic, ethylic, propylic, isopropylic, normal butylic, isobutylic, amylic, and octylic salts of, specific rotation of the (PURDIE and WILLIAMSON), T., 823; P., **1896**, 97.
Malonic acid, absorption by silk of dilute (WALKER and APPLEYARD), T., 1346; P., **1896**, 147.
ethylic salt, molecular volume of, in organic solvents (NICOL), T., 143; P., **1895**, 237.
action of sodium ethoxide and β-bromethylphenylether on (BENTLEY, HAWORTH, and PERKIN), T., 167, 169; P., **1896**, 35, 36.
Malonic acid, sodio-, ethylic salt, action of ethylic *iso*propylacrylate on (PERKIN), T., 1490.
action of ethylic αββ-trimethylpropionate on (PERKIN and THORPE), T., 1485.
Maltose, reducing power of, on ammoniacal silver nitrate (HENDERSON), T., 153; P., **1896**, 9.
Mandelic acid (*phenylglycollic acid*), potassium salt, electrolysis of (WALKER), T., 1279.
Manganese nitrate, hydrated, absorption of moisture by (HAKE), P., **1896**, 34.
cæsium sulphate, density and optical behaviour of (TUTTON), T., 403.
rubidium sulphate, density and optical behaviour of (TUTTON), T., 399.
Manures, effect of potash, on different soils (WOOD), T., 288; P., **1896**, 13.
increase of crop by potash, compared with available potash in soil (WOOD), T., 289; P., **1896**, 13.
Mauve, discovery of (HOFMANN LECTURE), T., 604; P., **1893**, 138.
Mauveine and its salts (HOFMANN LECTURE), T., 613.
action of ethylic iodide on (HOFMANN LECTURE), T., 617.
Melamine, constitution of (HOFMANN LECTURE), T., 717.
Membrane, a perfect semi-permeable (FITZGERALD), T., 905; P., **1896**, 25.
Membranes, semi-permeable, theory of (FITZGERALD), T., 897; P., **1896**, 25.
Memorial lectures: Helmholtz (FITZGERALD), T., 885; P., **1896**, 26.
Hofmann (ABEL, ARMSTRONG, PERKIN, PLAYFAIR), T., 575; P., **1893**, 133.
Lothar Meyer (BEDSON), T., 1403; P., **1896**, 119.
Menthol, crystalline modifications of (POPE), P., **1896**, 143.
Mercury, solution and diffusion of metals and alloys in (HUMPHREYS), T., 250, 1679; P., **1896**, 220; (ROBERTS-AUSTEN), P., **1896**, 9, 219.
Mercury, amidosulphonates (DIVERS and HAGA), T., 1649; P., **1896**, 180.
imidosulphonates (DIVERS and HAGA), T., 1627; P., **1896**, 179.
Mercurous and mercuric chlorides, mutual conversion of (HADA), T., 1675; P., **1896**, 183.
nitrates, mutual conversion of (HADA), T., 1667; P., **1896**, 182.
phosphates, mutual conversion of (HADA), T., 1673; P., **1896**, 182.
sulphates, mutual conversion of (HADA), T., 1672; P., **1896**, 182.
acetates, perchlorates, and oxalates, mutual conversion of (HADA), T., 1674; P., **1896**, 183.
Mercurous oxide and carbonate, decomposition of (HADA), T., 1677; P., **1896**, 183.
Mesidine, nitro-, preparation of (HOFMANN LECTURE), T., 694.
Mesitylene, composition of (HOFMANN LECTURE), T., 694.
magnetic rotatory power, &c., of (PERKIN), T., 1064, 1130, 1193, 1241.
Mesitylene, *tri*bromo-, discovery of (HOFMANN LECTURE), T., 694.
*di*nitro-, preparation of (HOFMANN LECTURE), T., 694.
Mesitylenesulphonic acid, discovery of (HOFMANN LECTURE), T., 694.
Methane, synthesis of, from carbon and hydrogen (BONE and JORDAN), P., **1896**, 61.
explosive mixtures of air and (CLOWES), P., **1895**, 201.
combustion of, in presence of nitrogen (DUNSTAN and CARR), P., **1896**, 49.
Methenehydrazone, remarks on constitution of (WALKER), T., 1286.
Methenyl-*o*-aminothiophenol, preparation of (HOFMANN LECTURE), T., 712, 713.
amyloiodide, colouring matter ob-

tained from (HOFMANN LECTURE), T., 714.
Methenyl-*o*-aminothiophenol, chloro-, preparation of (HOFMANN LECTURE), T., 712.
o-Methoxybenzaldehyde (*methylsalicylaldehyde*), magnetic rotatory power, &c., of (PERKIN), T., 1127, 1128, 1200, 1243.
o-Methoxybenzoic acid (*methylsalicylic acid*), magnetic rotatory power, &c., of the ethylic salt of (PERKIN), T., 1127, 1128, 1130, 1160, 1176, 1231, 1238.
m-Methoxybenzoic acid, magnetic rotatory power, &c., of the ethylic salt of (PERKIN), T., 1130, 1177, 1238.
o-Methoxybenzylic alcohol (*methylsalicylic alcohol*), magnetic rotatory power, &c., of (PERKIN), T., 1128, 1198, 1242.
αμ-Methoxypenthiazoline, γ-bromo- (DIXON), T., 32; P., **1895**, 217.
Methoxyphenylacrylic acids, *α-o-* and *β-o-*, magnetic rotatory powers, &c., of the methylic salts of (PERKIN), T., 1147, 1228, 1247.
Methylacetoacetic acid, ethylic salt, action of sodium ethoxide and bromethyl phenyl ether on (BENTLEY, HAWORTH, and PERKIN), T., 173; P., **1896**, 36.
condensation of, with ethylic chlorofumarate (RUHEMANN and WOLFF), T., 1384; P., **1896**, 166.
Methylallylthiocarbamide, action of bromine on (DIXON), T., 852.
Methylamine, discovery of (HOFMANN LECTURE), T., 656.
hydrochloride (LUXMOORE), T., 184.
Methylaniline (HOFMANN LECTURE), T., 598.
preparation of (HOFMANN LECTURE), T., 624, 625.
magnetic rotatory power, &c., of (PERKIN), T., 1099, 1207, 1244.
Methylaniline, bromonitro- (EVANS), P., **1895**, 236.
*tri*bromo- (EVANS), P., **1895**, 235.
Methylanilines, colouring matters obtained from (HOFMANN LECTURE), T., 623.
Methylbenzaconine, formation of (DUNSTAN, TICKLE, and JACKSON), P., **1896**, 159.
salts of, hydrolysis of (DUNSTAN, TICKLE, and JACKSON), P., **1896**, 160.
N-Methylbenz*anti*aldoxime and its hydrobromide (LUXMOORE), T., 183; P., **1895**, 149.
hydriodide (LUXMOORE), T., 185.
N-Methylbenz*syn*aldoxime and its hydrobromide (LUXMOORE), T., 184, 185; P., **1895**, 149.
1 : 3 : 4-Methylbenzenedicarboxylic acid. See *α*-Methylphthalic acid.
α-Methylbutyric acid. See Valeric acids.
Methylbutryolactones. See Valerolactones.
Methyldiethylamine, preparation of (HOFMANN LECTURE), T., 670.
Methyldiethylamylammonium hydroxide, action of heat on (HOFMANN LECTURE), T., 666.
Methyldiethyl*iso*amylammonium platinochloride, crystalline form of (HOFMANN LECTURE), T., 671.
2-Methyldihydrofurfuran-3 : 4-dicarboxylamic acid, ethylic salt (RUHEMANN and WOLFF), T., 1393.
2-Methyldihydrofurfuran-3 : 4-dicarboxylic acid, ethylic salt of (RUHEMANN and WOLFF), T., 1392.
2-Methyldihydrofurfuran-3 : 4 : 5-tricarboxylic acid, ethylic salt (RUHEMANN and TYLER), T., 532; P., **1896**, 73.
Methyldiphenyl. See Phenyltoluene.
Methyldiphenylamine, magnetic rotatory power, &c., of (PERKIN), T., 1101, 1157, 1208, 1232, 1244.
Methylenic diiodide, magnetic rotatory power and relative density of (PERKIN), T., 1063, 1173, 1237.
diiodide and dichloride, action of sodium phenoxide on (BENTLEY, HAWORTH, and PERKIN), T., 166, 167.
Methylethylacetic acid. See Valeric acids.
n-Methylethylene-ψ-thiourea, hydrobromide of (DIXON), T., 23.
Methyleugenol, synthesis of (MELDOLA, WOOLCOTT, and WRAY), T., 1321.
Methylfurfurandicarboxylic acid, ethylic salt of (RUHEMANN and WOLFF), T., 1388; P., **1896**, 166.
β-Methylhydroxylamine hydrochloride (LUXMOORE), T., 183.
Methylic alcohol, action of light on (RICHARDSON and FORTEY), T., 1351; P., **1896**, 164.
action of, on aconitine (DUNSTAN, TICKLE, and JACKSON), P., **1896**, 159.
Methylic iodide, action of hydroxylamine on (DUNSTAN and GOULDING), T., 839; P., **1896**, 72.
μ-Methylimidazoline, action of phenylthiocarbimide on (DIXON), T., 34; P., **1895**, 217.
action of *o*-tolylthiocarbimide on (DIXON), T., 35; P., **1895**, 217.

μ-Methylimidazolylphenylthiourea (Dixon), T., 34; P., **1895**, 217.
action of alkaline lead tartrate on (Dixon), T., 35; P., **1895**, 217.
μ-Methylimidazolyl-*o*-tolylthiourea (Dixon), T., 35; P., **1895**, 217.
β-Methylketopentamethylene. See Methyl*cyclo*pentanone.
Methylluteolin, preparation of (Perkin), T., 211; P., **1896**, 37.
Methylmalonic acid (iso-*succinic acid*), ethereal salts, action of sodium ethoxide and ethylene dibromide on (Bentley, Haworth, and Perkin), T., 162.
sodio-, ethylic salt, action of bromo- or chloroethyl phenyl ether on (Bentley, Haworth, and Perkin), T., 171; P., **1896**, 36.
behaviour of, towards ethylic α-brom*iso*valerate (Bentley, Perkin, and Thorpe), T., 284; P., **1896**, 65.
action of *iso*propylic bromide on (Perkin), T., 1477.
μ-Methylpenthiazoline, γ-bromo-, and its picrate (Dixon), T., 853; P., **1896**, 100.
action of silver nitrate on (Dixon), T., 853.
hydrobromide (Dixon), T., 852; P., **1896**, 100.
action of caustic potash on (Dixon), T., 853; P., **1896**, 100.
action of silver chloride on (Dixon), T., 853.
hydrochloride (Dixon), T., 853.
α-Methylphthalic acid (1 : 3 : 4-*methylbenzenedicarboxylic acid*), from dimethylnaphthalene (Collie and Wilsmore), T., 249; P., **1896**, 47.
1 : 2 : 4-Methyl*iso*phthalic acid and its methylic salt (Bentley and Perkin), P., **1896**, 79.
$\alpha\alpha_1$-Methyl*iso*propyladipic acid (Bentley, Haworth, and Perkin), T., 161.
Methyl*iso*propyl*cyclo*butanedicarboxylic acid (Bentley, Haworth, and Perkin), T., 161.
ethylic salt, T., 162.
Methyl*iso*propylbutanetricarboxylic acid, ethylic salt (Bentley, Haworth, and Perkin), T., 162.
Methyl*iso*propylethanetricarboxylic acid, ethylic salt, hydrolysis of (Bentley, Perkin, and Thorpe), T., 274; P., **1896**, 64.
cis-Methyl*iso*propylsuccinic acid, silver salt, anil and anilic acid of (Bentley, Perkin, and Thorpe), T., 279, 282; P., **1896**, 64.
trans-Methyl*iso*propylsuccinic acid and its silver salt, anil and anilic acid (Bentley, Perkin, and Thorpe), T., 278, 283; P., **1896**, 65.
Methyl*iso*propylsuccinic anhydride, *cis*- and *trans*- forms of (Bentley, Perkin, and Thorpe), T., 278; P., **1896**, 65.
Methylpurpuroxanthin from *m*-dihydroxybenzoic and *o*-toluic acids, diacetyl derivative of (Schunck and Marchlewski), T., 70; P., **1895**, 202.
Methylpurpuroxanthins from *m*-dihydroxybenzoic and *m*-toluic acids (Schunck and Marchlewski), T., 69; P., **1895**, 202.
Methylsalicylaldehyde. See *o*-Methoxybenzaldehyde.
Methylsalicylanilide. See *o*-Methoxybenzanilide.
Methylsalicylic acid. See *o*-Methoxybenzoic acid.
Methylsalicylic alcohol. See *o*-Methoxybenzylic alcohol.
Methylsuccinimide. See Pyrotartarimide.
Methylterephthalic acid, methylic salt of (Bentley and Perkin), P., **1896**, 79.
Methylthiocarbimide, action of bromethylamine on (Dixon), T., 23.
Methyltriethylammonium chloride and hydroxide, action of heat on (Hofmann Lecture), T., 670.
Methyltriethylphosphonium chloride, chloro- (Hofmann Lecture), T., 680.
hydroxide (Hofmann Lecture), T., 680.
preparation of (Hofmann Lecture), T., 675.
iodide, discovery of (Hofmann Lecture), T., 602.
Meyer, Lothar, memorial lecture (Bedson), T., 1403; P., **1896**, 119.
Modern theories of chemistry, the, L. Meyer (Bedson), T., 1427; P., **1896**, 119.
Molybditartaric acid, sodium salt of (Henderson and Barr), T., 1455; P., **1896**, 169.
Morin, the colouring matter of *Maclura tinctoria*, properties of (Perkin and Bablich), T., 792; P., **1896**, 106.
constitution of, in relation to

quercetin, chrysin, and gentisein (PERKIN and BABLICH), T., 798; P., **1896**, 106.
Morin, action of fused alkali on (PERKIN and BABLICH), T., 793; P., **1896**, 106.
Morin hydriodide, analysis of (PERKIN), T., 1442; P., **1896**, 167.
dimethyl ether, preparation and properties of (PERKIN and BABLICH), T., 798; P., **1896**, 106.
tetramethyl ether, preparation, and acetyl derivative of (PERKIN and BABLICH), T., 796; P., **1896**, 106.
decomposition of, with alcoholic potash (PERKIN and BABLICH), T., 797; P., **1896**, 106.
Morin, *tetra*bromo-, preparation of, and the pentacetyl derivative of (PERKIN and BABLICH), T., 794; P., **1896**, 106.
non-formation of acid compounds of (PERKIN), T., 1443; P., **1896**, 167.
Myrica nagi, yellow colouring matter of (PERKIN and HUMMEL), T., 1287; P., **1896**, 145.
dyeing properties of, and tannin in (PERKIN and HUMMEL), T., 1294; P., **1896**, 145.
Myricetin, the yellow colouring matter of *Myrica nagi* (PERKIN and HUMMEL), T., 1287; P., **1896**, 145.
identity of the colouring matter of sumach with (PERKIN and ALLEN), T., 1302; P., **1896**, 157.
preparation, and chemical and dyeing properties of (PERKIN and HUMMEL), T., 1287; P., **1896**, 145.
Myricetin, constitution of, and its relation to quercetin (PERKIN and HUMMEL), T., 1293; P., **1896**, 145.
action of fused alkalis on (PERKIN and HUMMEL), T., 1292; P., **1896**, 145.
acetyl and benzoyl derivative of (PERKIN and HUMMEL), T., 1291; P., **1896**, 145.
Myricetin, *tetra*bromo-, preparation and properties of (PERKIN and HUMMEL), T., 1293; P., **1896**, 145.

N.

Naphthalene, discovery of (HOFMANN LECTURE), T., 597.
magnetic rotatory power, &c., of (PERKIN), T., 1064, 1088, 1089, 1195, 1242.
Naphthalene, 1 : 2-*di*chloro-, from 2 : 1-chloronaphthalenesulphonamide (ARMSTRONG and WYNNE), P., **1895**, 238.
1 : 3-*di*chloro- (ARMSTRONG and WYNNE), P., **1895**, 240.
1 : 2′-*di*chloro- (ARMSTRONG and WYNNE), P., **1895**, 241.
1 : 3 : 4′-*tri*chloro- (ARMSTRONG and WYNNE), P., **1895**, 241.
α-nitro-, magnetic rotatory power, &c., of (PERKIN), T., 1096, 1181, 1239.
*di*nitro-, reduction of (HOFMANN LECTURE), T., 647.
1 : 2′-Naphthalenedisulphonic acid, chloride (ARMSTRONG and WYNNE), P., **1895**, 240.
3 : 4′-Naphthalenedisulphonic acid, 1-chloro-, and its chloride (ARMSTRONG and WYNNE), P., **1895**, 241.
1-Naphthalenesulphonic acid, nitration of the potassium salt (ARMSTRONG and WYNNE), P., **1895**, 239.
2-chloro-, barium, potassium, sodium salts, chloride, amide (ARMSTRONG and WYNNE), P., **1895**, 238.
3-Naphthalenesulphonic acid, 1-chloro- (ARMSTRONG and WYNNE), P., **1895**, 240.
sulphonation of potassium salt (ARMSTRONG and WYNNE), P., **1895**, 241.
α-Naphthoic acid, magnetic rotatory power, &c., of the ethylic salt of (PERKIN), T., 1137, 1161, 1179, 1234, 1238.
β-Naphthoic acid, magnetic rotatory power, &c., of the ethylic salt of (PERKIN), T., 1137, 1161, 1179, 1232, 1238.
α-Naphthol, *di*nitro-, discovery of (HOFMANN LECTURE), T., 621.
Naphthonitrile, preparation of (HOFMANN LECTURE), T., 705.
α- and β-Naphthonitriles, magnetic rotatory powers, &c., of (PERKIN), T., 1097, 1137, 1206, 1244.
Naphthothioamide, preparation of (HOFMANN LECTURE), T., 705.
α-Naphthyl ethyl oxide, magnetic rotatory power, &c., of (PERKIN), T., 1064, 1134, 1160, 1189, 1231, 1241.
β-Naphthyl ethyl oxide, magnetic rotatory power, &c., of (PERKIN), T., 1134, 1160, 1190, 1231, 1241.
Naphthyl *iso*cyanate, preparation of (HOFMANN LECTURE), T., 715.
α-Naphthylamine, composition of (HOFMANN LECTURE), T., 603; P., **1893**, 138.
magnetic rotatory power, &c., of

(PERKIN), T., 1064, 1107, 1134, 1155, 1160, 1211, 1245.
α-Naphthylamine, action of cyanogen chloride on (HOFMANN LECTURE), T., 601.
β-Naphthylamine, magnetic rotatory power, &c., of (PERKIN), T., 1107, 1134, 1155, 1160, 1212, 1233, 1245.
2 : 1 : 4′-Naphthylaminedisulphonic acid (ARMSTRONG and WYNNE), P., **1895**, 238.
4′ : 1 : 2′-Naphthylaminedisulphonic acid, hydrogen potassium salt (ARMSTRONG and WYNNE), P., **1895**, 240.
1 : 3-Naphthylaminesulphonic acid (*γ-naphthylaminesulphonic acid*) (ARMSTRONG and WYNNE), P., **1895**, 239.
sulphonation of (ARMSTRONG and WYNNE), P., **1895**, 240.
2 : 1-Naphthylaminesulphonic acid, sodium salt (ARMSTRONG and WYNNE), P., **1895**, 238.
μα-Naphthylaminopenthiazoline, γ-bromo-, and its picrate (DIXON), T., 29; P., **1895**, 217.
μβ-Naphthylaminopenthiazoline, γ-bromo- (DIXON), T., 28; P., **1895**, 217.
ab-α-Naphthylcarboxyethylthiocarbamide (DORAN), T., 328; P., **1896**, 74.
ab-β-Naphthylcarboxyethylthiocarbamide (DORAN), T., 329; P., **1896**, 74.
α-Naphthyldimethylamine, magnetic rotatory power, &c., of (PERKIN), T., 1108, 1138, 1156, 1213, 1233, 1245.
β-Naphthyldimethylamine, magnetic rotatory power, &c., of (PERKIN), T., 1108, 1138, 1156, 1212, 1234, 1245.
1 : 4-Naphthylenediamine, preparation of (HOFMANN LECTURE), T., 647.
Nickel chloride, hydrated, absorption of moisture by (HAKE), P., **1896**, 34.
cæsium sulphate, density and optical behaviour of (TUTTON), T., 415.
potassium sulphate, density and optical behaviour of (TUTTON), T., 407.
rubidium sulphate, density and optical behaviour of (TUTTON), T., 411.
Nicotine, action of cyanogen on (HOFMANN LECTURE), T., 650.
Nitriles, action of sulphuric acid on (HOFMANN LECTURE), T., 696.
iso-Nitriles, preparation of (HOFMANN LECTURE), T., 706.
Nitro-compounds, nature of (HOFMANN LECTURE), T., 646.
theory of the reduction of (MELDOLA), T., 13.
Nitrogen iodide, preparation and analysis of (CHATTAWAY), T., 1575; P., **1896**, 173.
constitution of (CHATTAWAY), T., 1572; P., **1896**, 172.
behaviour of, to reagents (CHATTAWAY), T., 1578; P., **1896**, 173.
Nitrous oxide, combination of, with carbonic oxide (DIXON), T., 780; P., **1896**, 56.
Hyponitrous acid, formation of, by reduction of nitrososulphates (DIVERS and HAGA), T., 1613; P., **1896**, 179.
Nitric oxide, liquid and solid (DEWAR), P., **1895**, 225.
Nitrogen, estimation of, by the absolute method (DUNSTAN and CARR), P., **1896**, 48.
estimation of, in urine by the hypobromite process (ALLEN), P., **1896**, 31.

O.

Obituary notices: S. W. M. Davy, T., 733.
Robert Galloway, T., 733.
George M. Roberts, T., 734.
Henry Davis Pochin, T., 735.
Octylic alcohol, action of light on (RICHARDSON and FORTEY), T., 1352; P., **1896**, 164.
bromide, chloride, and iodide, magnetic rotatory power and relative density of (PERKIN), T., 1063, 1173, 1236, 1237.
Oil of *Cochlearia officinalis* (HOFMANN LECTURE), T., 718.
Onion, occurrence of quercetin in the outer skin of the (PERKIN and HUMMEL), T., 1295; P., **1896**, 144.
Osazones of furfuroids from barley-straw (CROSS, BEVAN, and SMITH), T., 1607; P., **1896**, 174.
Osmotic pressure, theory of (FITZGERALD), T., 905; P., **1896**, 25.
Oxalic acid, absorption by silk of dilute (WALKER and APPLEYARD), T., 1346; P., **1896**, 147.
aniline salt of (HOFMANN LECTURE), T., 641.
ethylic salt, molecular volume of, in organic solvents (NICOL), T., 143; P., **1895**, 237.
Oxalyldiphenylguanidine, preparation of (HOFMANN LECTURE), T., 653.
Oxygen, specific gravity of, and combustion in liquid (DEWAR), P., **1895**, 226.
Oxygen, estimation of, by pyrogallol, source of error in (CLOWES), P., **1895**, 200.

Oxysulphazotic acid. See Sulphur—nitrosodisulphonic acid.
Ozone, absence of, in oxygen from manganese dioxide and potassium chlorate (McLeod), T., 1015; P., **1896**, 104.
apparatus for demonstrating the properties of (Newth), T., 1298; P., **1896**, 139.
influence of, on the combustibility of dry carbonic oxide (Dixon), T., 785; P., **1896**, 56.

P.

Palmitic acid, action of light on (Richardson and Fortey), T., 1349.
Palmitic chloride, action of lead thiocyanate on (Dixon), T., 1594.
n-Palmityl-*ν*-phenylbenzylthiourea, and action of silver nitrate on (Dixon), T., 1598; P., **1896**, 223.
a-Palmityl-*b*-phenylbenzylurea (Dixon), T., 1598; P., **1896**, 223.
n-Palmityl-*ν*-phenylmethylthiourea (Dixon), T., 1597; P., **1896**, 223.
ab-Palmitylphenylthiocarbamide (Dixon), T., 1595; P., **1896**, 223.
Palmitylphenylurea (Dixon), T., 1596; P., **1896**, 223.
Palmitylthiocarbamide, action of silver nitrate on (Dixon), T., 1596.
Palmitylthiocarbimide (Dixon), T., 1594; P., **1896**, 223.
action of aniline, *o*- and *p*-toluidine, methylaniline, and benzylaniline on (Dixon), T., 1595—1598.
ab-Palmityl-*o*-tolylthiocarbamide, and action of silver nitrate on (Dixon), T., 1596; P., **1896**, 223.
ab-Palmityl-*p*-tolylthiocarbamide, and action of silver nitrate on (Dixon), T., 1597; P., **1896**, 223.
ab-Palmityl-*o*-tolylurea (Dixon), T., 1596; P., **1896**, 223.
ab-Palmityl-*p*-tolylurea (Dixon), T., 1597; P., **1896**, 223.
Paraffin, $C_{29}H_{60}$, from Charas (Wood, Spivey, and Easterfield), T., 543; P., **1896**, 76.
Paraniline, discovery of (Hofmann Lecture), T., 689.
Pentacarbon rings, synthesis of (Japp and Murray), P., **1896**, 146.
Pentacetyltetrabromomorin, preparation of (Perkin and Bablich), T., 795; P., **1896**, 186.
Pentamethylaniline, nitrile and *iso*-nitrile obtained from (Hofmann Lecture), T., 710.
Pentane-$\alpha\gamma\gamma\alpha$-tetracarboxylic acid (Heinke and Perkin), T., 1509.
action of heat on (Heinke and Perkin), T., 1509.
ethylic salt (Heinke and Perkin), T., 1509.
Pentanetricarboxylic acids:—
n-Pentane-$\alpha\gamma\alpha_1$-tricarboxylic acid (Heinke and Perkin), T., 1510.
Dimethylpropane-$aa\alpha_1$-tricarboxylic acid, action of heat on (Perkin and Goodwin), T., 1474.
and salts (Perkin and Goodwin), T., 1473.
ethylic salt (Perkin and Goodwin), T., 1472; P., **1896**, 170.
sodio-, ethylic salt, action of phenoxyethylic bromide on (Perkin), T., 1500; P., **1896**, 170.
Pentenoic acid:—
$\beta\beta$-Dimethylacrylic acid (Perkin and Goodwin), T., 1469; P., **1896**, 170.
ethylic salt (Perkin and Goodwin), T., 1470, 1471.
action of ethylic sodiomalonate on (Perkin and Goodwin), T., 1472; P., **1896**, 170.
Penthiazoline, γ-bromo-μ-amido- (*β-bromotrimethylene-ψn-thiourea*), and its constitution of (Dixon), T., 19, 23, 24; P., **1895**, 216.
action of hydrochloric acid on (Dixon), T., 20; P., **1895**, 215.
action of nascent hydrogen on (Dixon), T., 24.
action of picric acid on (Dixon), T., 21; P., **1895**, 216.
action of hydrobromic acid on (Dixon), T., 20; P., **1895**, 215.
γ-iodo-μ-amido- (*β-iodotrimethylene-ψn-thiourea*), picrate of, and action of silver nitrate on (Dixon), T., 26; P., **1895**, 216.
Pentose, change of hexose to, derivatives in cereal cellulose (Cross, Bevan, and Smith), T., 1609; P., **1896**, 175.
Pentose-monoformal, formation of, from a hexose in plants (Cross, Bevan, and Smith), T., 1610; P., **1896**, 175.
Pentoses, action of alkalis on (Cross, Bevan, and Smith), T., 816; P., **1896**, 96.
origin of, in plants (Cross, Bevan, and Smith), T., 805; P., **1896**, 96.
oxidation of, by hydrogen peroxide (Cross, Bevan, and Smith), T., 814; P., **1896**, 96.
Periodic law, L. Meyer's contributions

to the (BEDSON), T., 1414; P., **1896**, 119.
Periodic system, solubility and diffusivity of metals in mercury related to their position in the (HUMPHREYS), T., 1683; P., **1896**, 220.
"Perkin's green," discovery of (HOFMANN LECTURE), T., 618.
Phenanthrene, magnetic rotatory power, &c., of (PERKIN), T., 1088, 1151, 1196, 1242.
Phenetoil (*phenyl ethyl oxide*), magnetic rotatory power, &c., of (PERKIN), T., 1080, 1081, 1186, 1240.
Phenol, isolation of, from coal-tar (HOFMANN LECTURE), T., 597.
composition of (HOFMANN LECTURE), T., 641.
properties of (HOFMANN LECTURE), T., 654.
magnetic rotatory power, &c., of (PERKIN), T., 1064, 1090, 1181, 1239.
Phenol, 2 : 4 : 6-bromo*di*nitro- (MELDOLA, WOOLCOTT, and WRAY), T., 1326; P., **1896**, 163.
4 : 6 : 2-*di*bromonitro- (MELDOLA, WOOLCOTT, and WRAY), T., 1329.
2 : 4 : 6-bromonitramino-, and its acetyl derivative (MELDOLA, WOOLCOTT, and WRAY), T., 1326; P., **1896**, 163.
2 : 4 : 6-*tri*chloro-, preparation of (HOFMANN LECTURE), T., 641.
2-chloro-4-nitro-, and its benzoyl and acetyl derivatives (MELDOLA, WOOLCOTT, and WRAY), T., 1328; P., **1896**, 164.
2-chloro-5-nitro-, and its benzoyl derivative (MELDOLA, WOOLCOTT, and WRAY), T., 1325; P., **1896**, 163.
4-chloro-3-nitro-, and its benzoyl and acetyl derivatives (MELDOLA, WOOLCOTT, and WRAY), T., 1322; P., **1896**, 163.
chloro*di*nitro-derivatives of (MELDOLA, WOOLCOTT, and WRAY), T., 1323.
2-chloro-4 : 6-*di*nitro- (MELDOLA, WOOLCOTT, and WRAY), T., 1328.
2 : 4 : 6-chloronitramino- (MELDOLA, WOOLCOTT, and WRAY), T., 1328.
o-nitro-, discovery of (HOFMANN LECTURE), T., 698.
4-nitro-2-amino- (MELDOLA, WOOLCOTT, and WRAY), T., 1328; P., **1896**, 164.
5-nitro-2-amino- (MELDOLA, WOOLCOTT, and WRAY), T., 1325; P., **1896**, 163.
Phenol, 4-5-*di*nitro-2-amino- (MELDOLA, WOOLCOTT, and WRAY), T., 1325.
5-nitro-3 : 2-*di*azoxy- (MELDOLA, WOOLCOTT, and WRAY), T., 1334; P., **1896**, 164.
γ-Phenoxybutyric acid (*γ-phenoxyethylacetic acid*) (BENTLEY, HAWORTH, and PERKIN), T., 168; P., **1896**, 35.
action of hydrobromic acid on (BENTLEY, HAWORTH, and PERKIN), T., 168; P., **1896**, 36.
γ-Phenoxyethylacetic acid. See γ-Phenoxybutyric acid.
Phenoxyethylic bromide, action of ethylic sodiodimethylpropanetricarboxylate on (PERKIN), T., 1500; P., **1896**, 170.
action of ethylic sodio*iso*propylpropanetricarboxylate on (PERKIN), T., 1504; P., **1896**, 170.
Phenoxyethylic ethylic ether (PERKIN), T., 1501, 1503.
γ-Phenoxyethylmalonic acid (BENTLEY, HAWORTH, and PERKIN), T., 167; P., **1896**, 35.
action of heat on (BENTLEY, HAWORTH, and PERKIN), T., 168; P., **1896**, 35.
γ-Phenoxyethyl-α-methylacetic acid. See Phenoxyvaleric acid.
γ-Phenoxyethyl-α-methylacetoacetic acid, ethylic salt, and its hydrolysis (BENTLEY, HAWORTH, and PERKIN), T., 173.
γ-Phenoxyethyl-α-methylmalonic acid (BENTLEY, HAWORTH, and PERKIN), T., 171; P., **1896**, 36.
action of heat on (BENTLEY, HAWORTH, and PERKIN), T., 172; P., **1896**, 36.
ethylic salt (BENTLEY, HAWORTH, and PERKIN), T., 171; P., **1896**, 36.
α-Phenoxy*iso*octane-γγδ-tricarboxylic acid (*phenoxyethylisopropylpropanetricarboxylic acid*), and the action of heat on it (PERKIN), T., 1504, 1505.
Phenoxyethyl*iso*propylglutaric acid (PERKIN), T., 1505.
Phenoxyethyl*iso*propylpropanetricarboxylic acid. See α-Phenoxy*iso*octane-γγδ-tricarboxylic acid.
Phenoxyvaleric acid: δ-Phenoxy-α-methylbutyric acid (*γ-phenoxyethyl-α-methylacetic acid*) (BENTLEY, HAWORTH, and PERKIN), T., 172, 173; P., **1896**, 36.
action of mineral acids on (BENTLEY,

HAWORTH, and PERKIN), T., 173; P., **1896**, 36.
Phenyl allyl oxide, magnetic rotatory power, &c., of (PERKIN), T., 1064, 1141, 1225, 1247.
Phenyl *iso*butyl oxide, magnetic rotatory power, &c., of (PERKIN), T., 1080, 1081, 1186, 1240.
Phenyl ethyl ketone, magnetic rotatory power, &c., of (PERKIN), T., 1091, 1093, 1201, 1243.
Phenyl methyl oxide. See anisoil.
Phenyl octyl oxide, magnetic rotatory power, &c., of (PERKIN), T., 1080, 1081, 1186, 1240.
Phenyl propyl oxide, magnetic rotatory power, &c., of (PERKIN), T., 1080, 1081, 1186, 1240.
Phenyl *iso*-propyl oxide, magnetic rotatory power, &c., of (PERKIN), T., 1080, 1081, 1186, 1240.
Phenylacetamide, from phenacetylthiocarbimide and ammonia (DIXON), T., 863.
magnetic rotatory power, &c., of (PERKIN), T., 1114, 1216, 1246.
Phenylacetic acid (*a-toluic acid*), magnetic rotatory power and relative density of (PERKIN), T., 1079, 1094, 1175, 1238.
action of phosphorus pentachloride on (DIXON), T., 865.
ethylic salt, magnetic rotatory power, &c., of (PERKIN), T., 1077, 1175, 1238.
Phenylacetic chloride (DIXON), T., 865; P., **1896**, 100.
magnetic rotatory power, &c., of (PERKIN), T., 1122, 1205, 1244.
action of lead thiocyanate on (DIXON), T., 865; P., **1896**, 100.
Phenylacetonitrile (*a-toluonitrile, benzylic cyanide*), occurrence of (HOFMANN LECTURE), T., 719.
magnetic rotatory power, &c., of (PERKIN), T., 1097, 1206, 1244.
n-Phenylacetyl-*p*-phenylbenzylthiourea (DIXON), T., 868; P., **1896**, 101.
ab-Phenylacetylphenylthiocarbamide, and the action of silver nitrate on (DIXON), T., 866; P., **1896**, 101.
ab-Phenylacetylphenylurea (DIXON), T., 866; P., **1896**, 101.
Phenylacetylthiocarbimide, and the action of ammonia, aniline, benzylaniline, and *o*- and *p*-toluidine on (DIXON), T., 865—868; P., **1896**, 101.
Phenylacetylthiocarbimide, action of water on (DIXON), T., 865.
ab-Phenylacetyl-*o*-tolylthiocarbamide, and the action of silver nitrate on (DIXON), T., 866, 867; P., **1896**, 101.
ab-Phenylacetyl-*p*-tolylthiocarbamide, and the action of silver nitrate on (DIXON), T., 867; P., **1896**, 101.
Phenylacetyl-*o*-tolylurea (DIXON), T., 867; P., **1896**, 101.
ab-Phenylacetyl-*p*-tolylurea (DIXON), T., 868; P., **1896**, 101.
Phenylallylthiocarbamide, action of bromine on (DIXON), T., 852; P., **1896**, 99.
Phenylazoimide, magnetic rotatory power, &c., of (PERKIN), T., 1098, 1154, 1209, 1232, 1245.
Phenylbenzylcarboxyethylthiourea (DORAN), T., 332; P., **1896**, 75.
Phenylbutylene (iso-*butenylbenzene*), magnetic rotatory power, &c., of (PERKIN), T., 1143, 1224, 1229, 1246.
Phenylcarbamine, preparation of (COHEN and ARCHDEACON), T., 92; (HOFMANN LECTURE), T., 652.
Phenylcarbimide (*phenylic* iso*cyanate*), discovery of (HOFMANN LECTURE), T., 653.
preparation of (HOFMANN LECTURE), T., 710, 714.
properties of (HOFMANN LECTURE), T., 654.
Phenylcarboxyethylsemithiocarbazide (DORAN), T., 333; P., **1896**, 75.
ab-Phenylcarboxyethylthiocarbamide (DORAN), T., 326; P., **1896**, 74.
Phenylcarboxyethylthiourea, probable non-existence of (DORAN), T., 341, 344; P., **1896**, 75.
Phenyldihydrofurfurantricarboxylic acid, triethylic salt, action of ammonia and of potassium hydroxide on (RUHEMANN and WOLFF), T., 1384; P., **1896**, 166.
Phenyldimethylamine, preparation of (HOFMANN LECTURE), T., 670.
o-Phenylenediamine, magnetic rotatory power, &c., of (PERKIN), T., 1104, 1109, 1131, 1214, 1245.
hydrochloride, magnetic rotatory power, &c., of (PERKIN), T., 1112, 1132, 1223, 1246.
m-Phenylenediamine, discovery of (HOFMANN LECTURE), T., 688.
magnetic rotatory power, &c., of (PERKIN), T., 1109, 1131, 1155, 1214, 1232, 1245.
hydrochloride, magnetic rotatory power, &c., of (PERKIN), T., 1112, 1132, 1223, 1246.
p-Phenylenediamine, preparation of (HOFMANN LECTURE), T., 689.
hydrochloride, magnetic rotatory

powers, &c., of (PERKIN), T., 1112, 1132, 1223, 1246.
p-Phenylenedimethyldiamine, magnetic rotatory power, &c., of (PERKIN), T., 1109, 1215, 1246.
Phenylhydrazine, magnetic rotatory power, &c., of (PERKIN), T., 1104, 1209, 1245.
Phenylic β-bromethylic ether (BENTLEY, HAWORTH, and PERKIN), T., 165, 166.
chloride, *iso*cyano-, discovery of (HOFMANN LECTURE), T., 712.
β-chlorethylic ether (BENTLEY, HAWORTH, and PERKIN), T., 165.
*iso*cyanate. See Phenylcarbimide.
β-ethoxyethylic ether (BENTLEY, HAWORTH, and PERKIN), T., 171.
mercaptan (*thiophenol*) *o*-amino-, preparation of (HOFMANN LECTURE), T., 712, 713.
compound obtained from, by action of cyanogen (HOFMANN LECTURE), T., 713.
sulphide, magnetic rotatory power, &c., of (PERKIN), T., 1064, 1124, 1204, 1243.
μ-Phenylmethylaminopenthiazoline, γ-bromo-, and hydrobromide of (DIXON), T., 29; P., **1895**, 217.
β-Phenylpropionic acid (*hydrocinnamic acid*), magnetic rotatory power, &c., of the ethylic salt of (PERKIN), T., 1064, 1077, 1078, 1175, 1238.
Phenylpropionitrile, occurrence of (HOFMANN LECTURE), T., 719.
Phenylrosaniline, preparation of (HOFMANN LECTURE), T., 615.
Phenylthicallophanic acid, ethylic salt. See Phenylcarboxyethylthiourea.
iso-Phenylthioallophanic acid, ethylic salt, identity of, with phenylcarboxyethylthiocarbamide (DORAN), T., 342, 344; P., **1896**, 75.
Phenylthiocarbamic acid, *m*-phenylene salt of (SNAPE), T., 101; P., **1896**, 13.
p-phenylene salt of (SNAPE), T., 101; P., **1896**, 13.
ψ-Phenylthiocarbamic acid, phenylic salt of (SNAPE), T., 99; P., **1896**, 13.
Phenylthiocarbamide, action of ethylic chlorocarbonate on, and its acetyl derivative (DORAN), T., 342.
Phenylthiocarbimide, preparation of (HOFMANN LECTURE), T., 710.
action of benzoic chloride on (HOFMANN LECTURE), T., 712.
action of, on glycol (SNAPE), T., 100; P., **1896**, 13.
action of, on phenol (SNAPE), T., 98; P., **1896**, 12.
Phenylthiocarbimide, action of phosphorus pentachloride on (HOFMANN LECTURE), T., 712.
action of, on quinol (SNAPE), T., 99; P., **1896**, 13.
action of, on resorcinol (SNAPE), T., 99; P., **1896**, 13.
Phenylthiourea (DIXON), T., 857.
Phenyltolylamine, discovery of (HOFMANN LECTURE), T., 615.
Phenyltriethylammonium hydroxide, action of heat on (HOFMANN LECTURE), T., 666.
Phenyltrimethylammonium chloride, action of heat on (HOFMANN LECTURE), T., 670.
iodide, action of heat on (HOFMANN LECTURE), T., 721.
"Phosphine," preparation of (HOFMANN LECTURE), T., 616.
Phosphines. See under Phosphorus.
Phosphorus pentoxide, vapour density of (TILDEN and BARNETT), T., 154; P., **1896**, 30.
Phosphoric acid, estimation of, in soils (WOOD), T., 291; P., **1896**, 13.
Metaphosphoric acid, vapour density of (TILDEN and BARNETT), T., 158; P., **1896**, 30.
Phosphorous acid, methylic salt, preparation of (HOFMANN LECTURE), T., 682.
Phosphines, primary and secondary, preparation of (HOFMANN LECTURE), T., 681, 682.
Phthalic acid, ethylic salt, magnetic rotatory power, &c., of (PERKIN), T., 1064, 1132, 1177, 1238.
Phthalic chloride, magnetic rotatory power, &c., of (PERKIN), T., 1205, 1244.
Phthalic acid, ethylic salt, magnetic rotatory power, &c., of (PERKIN), T., 1132, 1177, 1238.
Physiological action of amidosulphonic acid (LOEW), T., 1662; P., **1896**, 182.
of cinnamic acid (HOFMANN LECTURE), T., 698.
Picric acid, preparation of (HOFMANN LECTURE), T., 641.
absorption of, by silk (WALKER and APPLEYARD), T., 1339, 1343; P., **1896**, 147.
Picric chloride, action of mercuric and lead thiocyanates on (DIXON), T., 868; P., **1896**, 101.
Picrylthiocarbimide, attempted preparation of (DIXON), T., 868; P., **1896**, 101.

Pinene, constitution of (Armstrong), T., 1399; P., **1896**, 44; (Tilden), T., 1009; P., **1896**, 137.
relation of, to citrene (Armstrong), P., **1896**, 44.
capacity of, for bromine (Tilden), T., 1009; P., **1896**, 137.
Pinene dibromide, from the tetrabromide (Tilden and Nicholls), P., **1896**, 138.
hydrochloride, activity of (Armstrong), T., 1398.
behaviour of, towards nitric acid (Armstrong), T., 1401.
Pinole, constitution of (Tilden), T., 1014.
Pinonic acid, constitution of (Tilden), T., 1014.
Piper ovatum, preparation of piperovatine, the active principle of (Dunstan and Carr), P., **1895**, 177.
Piperazine, composition of (Hofmann Lecture), T., 688.
Piperidine, constitution of (Hofmann Lecture), T., 723.
thiocyanate (Dixon), T., 860.
Piperidylcarboxyethylthiourea (Doran), T., 332; P., **1896**, 75.
Piperidyldimethylammonium hydroxide, action of heat on (Hofmann Lecture), T., 723.
μ-Piperidylpenthiazoline, γ-bromo- (Dixon), T., 30; P., **1895**, 217.
Piperovatine, preparation of (Dunstan and Carr), P., **1895**, 177.
Plants, colouring matters of various British (Perkin and Hummel), T., 1566; P., **1896**, 185.
Platinum, effect of carbon on the melting point of (Hartley), T., 846; P., **1896**, 98.
influence of, in promoting the combination of carbonic oxide and oxygen (Dixon), T., 788; P., **1896**, 56.
Chlorplatinic acid, hydrated, absorption of moisture by (Hake), P., **1896**, 34.
Platinocyanides, phosphorescence of the salts of (Jackson), P., **1896**, 58.
Potash manure, increase of crop by, in comparison with the available potash in soils (Wood), T., 289; P., **1896**, 13.
Potassium amalgam, reduction by means of (Hofmann Lecture), T., 649.
chlorate, liberation of chlorine on heating manganese dioxide with (McLeod), T, 1015; P., **1896**, 141.
Potassium barium imidosulphonates (Divers and Haga), T., 1622.
mercury imidosulphonate (Divers and Haga), T., 1629.
nitrite, reduction of (Divers and Haga), T., 1612; P., **1896**, 179.
nitrososulphate, preparation and reduction of (Divers and Haga), T., 1611; P., **1896**, 179.
sulphate, constitution of double salts containing (Tutton), T., 519; P., **1896**, 71.
cobalt sulphate, density and optical behaviour of (Tutton), T., 419.
copper sulphate, density and optical behaviour of (Tutton), T., 431.
ferrous sulphate, density and optical behaviour of (Tutton), T., 387.
magnesium sulphate, density of (Tutton), T., 355.
optical behaviour of (Tutton), T., 356.
nickel sulphate, density and optical behaviour of (Tutton), T., 407.
zinc sulphate, density and optical behaviour of (Tutton), T., 374.
platinocyanide, phosphorescence of (Jackson), P., **1896**, 59.
tungstitartrate (Henderson and Barr), T., 1456; P., **1896**, 169.
estimation of available, in soils (Wood), T., 287; P., **1896**, 13.
Presidential address (Harcourt), T., 563; P., **1896**, 80.
Propionic acid, magnetic rotatory power and relative density of (Perkin), T., 1063, 1172, 1236.
Propionic acid, Lead tetrapropionate (Hutchinson and Pollard), T., 224; P., **1896**, 31.
phenylic salt, magnetic rotatory power, &c., of (Perkin), T., 1075, 1076, 1078, 1179, 1238.
Propionic acid, α-bromo-, ethylic salt, action of acetone on (Perkin and Thorpe), T., 1482.
dextrochloro-, ethylic salt, rotatory power of (Purdie and Williamson), T., 829; P., **1896**, 97.
β-iodo-, ethylic salt, action of ethylic sodioacetoacetate on (Bentley and Perkin), T., 1511.
action of ethylic sodio*iso*propylmalonate on (Heinke and Perkin), T., 1506; P., **1896**, 155.
Propionic chloride, action of lead thiocyanate on (Dixon), T., 856; P., **1896**, 100.
α-Propionyl-ν-phenylbenzylthiourea, and the action of alkalis and silver

nitrate on (DIXON), T., 859, 860; P., **1896**, 101.
α-Propionyl-ν-phenylbenzylthiourea, action of silver nitrate on (DIXON), T., 859; P., **1896**, 100.
ab-Propionylphenylthiocarbamide (DIXON), T., 856; P., **1896**, 100.
action of caustic potash on (DIXON), T., 857.
action of silver nitrate on (DIXON), T., 857; P., **1896**, 100.
α-Propionyl-β-phenylthiosemicarbazide (DIXON), T., 860; P., **1896**, 101.
Propionylphenylurea (DIXON), T., 857.
Propionylthiocarbimide (DIXON), T., 856; P., **1896**, 100.
action of ammonia, aniline, methylaniline, piperidine, and *o*-, *m*-, and *p*-toluidines on (DIXON), T., 856—862.
action of aldehyde-ammonia on (DIXON), T., 862.
action of benzylic alcohol on (DIXON), T., 862.
action of phenylhydrazine on (DIXON), T., 860; P., **1896**, 101.
ab-Propionyl-*o*-tolylthiocarbamide (DIXON), T., 858; P., **1896**, 100.
action of caustic potash on (DIXON), T., 858.
ab-Propionyl-*m*-tolylthiocarbamide (DIXON), T., 858; P., **1896**, 100.
action of alkali and of silver nitrate on (DIXON), T., 858.
ab-Propionyl-*p*-tolylthiocarbamide, and action of alkali and of silver nitrate on (DIXON), T., 859; P., **1896**, 100.
n-Propoxypenthiazoline, γ-bromo- (DIXON), T., 33; P., **1895**, 217.
Propylamine, β-bromo-, action of methyl- and allyl-thiocarbimides on (DIXON), T., 24; P., **1895**, 216.
Propylenediamine, discovery of (HOFMANN LECTURE), T., 687.
iso-Propylethanetricarboxylic acid, ethylic salt, anil, and anilic acid of (BENTLEY, PERKIN, and THORPE), T., 273.
iso-Propylfuran-α-naphthaquinone, preparation of (HOOKER), T., 1370, 1372.
iso-Propylfuran-β-naphthaquinone, preparation of (HOOKER), T., 1369, 1376.
azine obtained from, by the action of *o*-tolylenediamine (HOOKER), T., 1378.
iso-Propylglutaranilic acid (PERKIN), T., 1497; P., **1896**, 170; (HEINKE and PERKIN), T., 1508.
iso-Propylglutaric acid (HEINKE and PERKIN), T., 1507; P., **1896**, 155.
and its salts (PERKIN), T., 1495; P., **1896**, 154, 170.
action of acetic anhydride on (PERKIN), T., 1496.
oxidation of (PERKIN), T., 1497.
ethylic salt (PERKIN), T., 1496.
iso-Propylglutaric anhydride (PERKIN), T., 1496; P., **1896**, 170; (HEINKE and PERKIN), T., 1508.
action of aniline on (PERKIN), T., 1497.
Propylic alcohol, action of light on (RICHARDSON and FORTEY), T., 1351; P., **1896**, 164.
bromide, magnetic rotatory power and relative density of (PERKIN), T., 1063, 1173, 1237.
iso-Propylic alcohol, action of light on (RICHARDSON and FORTEY), T., 1352; P., **1896**, 164.
iso-Propylmalonic acid, alkylic salts of, action of sodium ethoxide and ethylenic bromide on (BENTLEY, HAWORTH, and PERKIN), T., 162.
sodio-, ethylic salt, action of ethylic β-iodopropionate on (HEINKE and PERKIN), T., 1506; P., **1896**, 155.
Propyl-ψ-nitrole. See Propane, β-nitro-β-nitroso-.
Propylthiocarbimide, βγ-*di*bromo- (DIXON), T., 17; P., **1895**, 215.
action of alcoholic ammonia on (DIXON), T., 18, 22; P., **1895**, 215, 216.
action of aniline on (DIXON), T., 17.
action of organic bases on (DIXON), T., 26; P., **1895**, 216.
action of methylic, ethylic, and propylic alcohols on (DIXON), T., 31—33; P., **1895**, 217.
action of methylamine on (DIXON), T., 854; P., **1896**, 100.
action of silver chloride on (DIXON), T., 20; P., **1895**, 215.
Propylthiourea, *di*bromo- (DIXON), T., 18, 23; P., **1895**, 215.
Purpuroxanthin, acid compound of (PERKIN), T., 1441; P., **1896**, 167.
5-Pyrazolone-3-carboxylic acid (RUHEMANN), T., 1396.
ethylic salt (RUHEMANN), T., 1394; P., **1896**, 166.
Pyridine, constitution of (HOFMANN LECTURE), T., 723.
magnetic rotatory power, &c., of (PERKIN), T., 1115, 1214, 1245.

Pyridine, *di*bromo-, preparation of (HOFMANN LECTURE), T., 723.
Pyrogallol, magnetic rotatory power, &c., of (PERKIN), T., 1127, 1185, 1240.
Pyrotartaric anhydride, magnetic rotatory power and relative density of (PERKIN), T., 1063, 1173, 1237.
Pyrroline, isolation of, from coal-tar (HOFMANN LECTURE), T., 597.
Pyruvic acid, ethylic salt, action of ethylic β-brom*iso*valerate on (PERKIN and THORPE), P., **1896**, 156.

Q.

Querbracho colorado, the colouring matter and other constituents of (PERKIN and GUNNELL), T., 1303; P., **1896**, 158.
Quercetin, colouring matter of *Crataegus oxyacantha* (PERKIN and HUMMEL), T., 1570; P., **1896**, 186.
existence of, in *Cheiranthus cheiri* (PERKIN and HUMMEL), T., 1568; P., **1896**, 185.
occurrence of, in outer skins of the bulb of the onion (PERKIN and HUMMEL), T., 1295; P., **1896**, 144.
constitution of acid compounds of (PERKIN), T., 1444; P., **1896**, 167.
Quercetin hydrochloride, analysis of (PERKIN), T., 1441; P., **1896**, 167.
monomethyl ether (*isorhamnetin*), existence of, in *Cheiranthus cheiri*, and its acetyl derivatives (PERKIN and HUMMEL), T., 1569; P., **1896**, 186.
tetramethyl ether, acid compound of (PERKIN), T., 1443; P., **1896**, 167.
Quercetin, *di*bromo-, non-formation of acid compounds of (PERKIN), T., 1443; P., **1896**, 167.
Quercetin-group of natural yellow colouring matters (PERKIN), T., 1441; P., **1896**, 167.
means of distinguishing members of, of natural yellow dye-stuffs (PERKIN), T., 1445; P., **1896**, 168.
Quinine, attempts to synthesise (HOFMANN LECTURE), T., 603; P., **1893**, 138.
Quinol, *di*thio-, preparation of (SNAPE), T., 100.
Quinoline, isolation of, from coal-tar (HOFMANN LECTURE), T., 597.
magnetic rotatory power, &c., of (PERKIN), T., 1115, 1117, 1214, 1245.
action of cyanogen on (HOFMANN LECTURE), T., 650.
Quinoline-red, preparation of (HOFMANN LECTURE), T., 627.
Quinoline-blue, composition of (HOFMANN LECTURE), T., 619.
Quinone, preparation of (HOFMANN LECTURE), T., 700.

R.

Reseda luteola, luteolin, the colouring matter of (PERKIN), T., 206; P., **1896**, 37.
Resorcinol, magnetic rotatory power, &c., of (PERKIN), T., 1084, 1127, 1130, 1239.
condensation of, with chloral (HEWITT and POPE), T., 1265; **1896**, 150.
condensation of, with chloral hydrate (HEWITT and POPE), T., 1266; P., **1896**, 150.
*di*thio-, preparation of (SNAPE), T., 100.
Rhamnazin, acid compound of (PERKIN), T., 1441; P., **1896**, 167.
iso-Rhamnetin, the yellow colouring matter in *Cheiranthus cheiri* (PERKIN and HUMMEL), T., 1569; P., **1896**, 186.
Rhus coriaria, the colouring matter of (PERKIN and ALLEN), T., 1299; P., **1896**, 157.
Rosaniline, discovery of (HOFMANN LECTURE), T., 609; P., **1893**, 138.
constitution of (HOFMANN LECTURE), T., 613, 689.
action of alkyl iodides on (HOFMANN LECTURE), T., 616.
Royal College of Chemistry, history of (HOFMANN LECTURE), T., 580.
Rubidium sulphate, constitution of double salts containing (TUTTON), T., 519; P., **1896**, 71.
cadmium sulphate, density and optical behaviour of (TUTTON), T., 445.
cobalt sulphate, density and optical behaviour of (TUTTON), T., 424.
copper sulphate, density and optical behaviour of (TUTTON), T., 437.
ferrous sulphate, density and optical behaviour of (TUTTON), T., 391.
magnesium sulphate, density and optical behaviour of (TUTTON), T., 361.

Rubidium manganous sulphate, density and optical behaviour of (TUTTON), T., 399.
nickel sulphate, density and optical behaviour of (TUTTON), T., 411.
zinc sulphate, density and optical behaviour of (TUTTON), T., 379.

S.

Safranine, discovery of (HOFMANN LECTURE), T., 625.
iso-Safrole, synthesis of (MELDOLA, WOOLCOTT, and WRAY), T., 1321.
Salicylaldehyde, magnetic rotatory power, &c., of (PERKIN), T., 1126, 1200, 1243.
Salicylamide, preparation of aniline from (HOFMANN LECTURE), T., 647.
Salicylic acid, absorption by silk of dilute (WALKER and APPLEYARD), T., 1346; P., **1896**, 147.
ethylic salt, rotatory power, &c., of (PERKIN), T., 1126, 1127, 1176, 1238.
molecular volume of, in organic solvents (NICOL), T., 143; P., **1895**, 237.
methylic salt, magnetic rotatory powers, &c., of the (PERKIN), T., 1126, 1127, 1176, 1238.
Santalenic acid (CHAPMAN and BURGESS), P., **1896**, 140.
Santalal, oxidation of (CHAPMAN and BURGESS), P., **1896**, 140.
Sesquiterpene, $C_{15}H_{24}$, from Charas (WOOD, SPIVEY, and EASTERFIELD), T., 542; P., **1896**, 76.
Silk, absorption of dilute acids by (WALKER and APPLEYARD), T., 1334; P., **1896**, 147.
Silver, diffusion of, in mercury (ROBERTS-AUSTEN), P., **1896**, 219.
solubility and rate of diffusion of, in mercury (HUMPHREYS), T., 247; P., **1896**, 9.
Silver alloys with gold, solubility of, in potassium cyanide solutions (MACLAURIN), T., 1276; P., **1896**, 149.
Silver amidosulphonate (DIVERS and HAGA), T., 1647; P., **1896**, 181.
sodium imidosulphonates (DIVERS and HAGA), T., 1626.
double sulphide of gold and (MACLAURIN), T., 1271; P., **1896** 149.
Sobrerol, constitution of (TILDEN), T., 1014.
Sodium amidosulphonate, preparation of, from sodium nitrite (DIVERS and HAGA), T., 1646.
Sodium amidosulphonate, electrolytic conductivity of (SAKURAI), T., 1657; P., **1896**, 181.
imidosulphonates (DIVERS and HAGA), T., 1621; P., **1896**, 179.
barium imidosulphonates (DIVERS and HAGA), T., 1622.
calcium imidosulphonate (DIVERS and HAGA), T., 1626; P., **1896**, 179.
mercury imidosulphonates (DIVERS and HAGA), T., 1629; P., **1896**, 179.
silver imidosulphonate (DIVERS and HAGA), T., 1626.
strontium imidosulphonate (DIVERS and HAGA), T., 1625; P., **1896**, 179.
sulphate, viscosity of aqueous solutions of (D'ARCY), T., 999; P., **1896**, 104.
condition of, in solution (D'ARCY), T., 993; P., **1896**, 104.
double salt of amidosulphonic acid and (DIVERS and HAGA), T., 1646.
Sodium antimoniomucate (HENDERSON and BARR), T., 1453; P., **1896**, 168.
molybditartrate (HENDERSON and BARR), T., 1455; P., **1896**, 169.
tungstitartrate (HENDERSON and BARR), T., 1456; P., **1896**, 169.
Soils, analysis of different (WOOD), T., 289; P., **1896**, 13.
estimation of available potash and phosphoric acid in, T., 287; P., **1896**, 13.
Solubility of metals and alloys in mercury (HUMPHREYS), T., 1679; P., **1896**, 220.
of silver and copper in mercury (HUMPHREYS), T., 247; P., **1896**, 9.
Solution, dynamical condition of molecules in (FITZGERALD), T., 902.
Solution theory of dyeing (WALKER and APPLEYARD), T., 1348; P., **1896**, 147.
Solutions, changes of volume during the formation of dilute (JONES), P., **1895**, 179.
condition of sodium sulphate in aqueous (D'ARCY), T., 993; P., **1896**, 104.
of organic substances, magnetic rotatory power of (PERKIN), T., 1052; P., **1896**, 122.
Sorbic acid, discovery of (HOFMANN LECTURE), T., 698.
Starch, reducing power of, on ammoniacal silver nitrate (HENDERSON), T., 151; P., **1896**, 9.
Stearamide (DIXON), T., 1602.
Stearic acid, action of light on (RICHARDSON and FORTEY), T., 1349.

Stearic chloride, action of lead thiocyanate on (DIXON), T., 1599.
Stearylbenzidide (DIXON), T., 1602, 1603.
ab-Stearyl-α-naphthylthiocarbamide, and the action of silver nitrate on (DIXON), T., 1601; P., **1896**, 223.
Stearyl-α-naphthylurea (DIXON), T., 1601; P., **1896**, 223.
a-Stearyl-*p*-phenylbenzylthiourea, and action of silver nitrate on (DIXON), T., 1602; P., **1896**, 223.
a-Stearyl-*b*-phenylbenzylurea (DIXON), T., 1602; P., **1896**, 223.
Stearylthiocarbimide (DIXON), T., 1599.
action of ammonia, benzylamine, benzylaniline, α-naphthylamine, phenylhydrazine, piperidine, *o*-toluidine, and *m*-xylidine on (DIXON), T., 1601, 1602.
ab-Stearyl-*o*-tolylthiocarbamide, and the action of silver nitrate on (DIXON), T., 1600; P., **1896**, 223.
Stearyl-*o*-tolylurea (DIXON), T., 1600; P., **1896**, 223.
ab-Stearyl-*m*-xylylthiocarbamide, and the action of silver nitrate on (DIXON), T., 1600; P., **1896**, 223.
ab-Stearyl-*m*-xylylurea (DIXON), T., 1601; P., **1896**, 223.
Stilbene (*diphenylethylene*), magnetic rotatory power, &c., of (PERKIN), T., 1150, 1225, 1246.
Straw, carbohydrates of barley- (CROSS, BEVAN, and SMITH), T., 1604, P., **1896**, 174.
Straws, existence of xylose-formal in the cellulose of cereal- (CROSS, BEVAN, and SMITH), T., 815; P., **1896**, 96.
Strontium, imidosulphonates (DIVERS and HAGA), T., 1622; P., **1896**, 179.
Strychnine, sulphur compound of (HOFMANN LECTURE), T., 719.
estimation of nitrogen in, by the absolute method (DUNSTAN and CARR), P., **1896**, 48.
Styrene (*cinnamene*), magnetic rotatory power, &c., of (PERKIN), T., 1143, 1149, 1224, 1246.
Styryl methyl ketone (*benzylideneacetone*), magnetic rotatory power, &c., of (PERKIN), T., 1145, 1229, 1247.
Substance, $C_4H_8N_2SBr_2$, from the action of bromine on allylthiourea (DIXON), T., 19; P., **1895**, 215.
action of caustic alkali on (DIXON), T., 19.
$C_4H_8N_2SI_2$, from allylthiourea and iodine (DIXON), T., 25; P., **1895**, 216.
action of caustic potash on (DIXON), T., 26; P., **1895**, 216.
Substance, $C_4H_8N_2SI_2$, action of silver chloride on (DIXON), T., 25.
$C_4H_8N_2SClI$, from $C_4H_8N_2SI_2$ and silver chloride (DIXON), T., 25.
$C_7H_8N_2$, from formaldehyde and excess of phenylhydrazine (WALKER), T., 1282.
action of sodium ethoxide and sodium on (WALKER), T., 1283.
action of excess of formaldehyde on (WALKER), T., 1284.
$C_8H_{10}O_9$, from dihydroxymaleic acid and hydrogen bromide in presence of acetic acid (FENTON), T., 559.
$C_{10}H_{13}NO_6$, from *trans*-π-camphanic acid (KIPPING), T., 961.
$C_{14}H_{16}O_4$, from diacetylacetone, oxime, conversion of, into dihydroxyacetyldimethylnaphthalene, and behaviour of, towards ammonia (COLLIE and WILSMORE), T., 300; P., **1896**, 47.
$C_{14}H_{16}N_4$, from methenehydrazone and ethylic acetate (WALKER), T., 1286, 1287.
$C_{15}H_{16}N_4$, preparation of two isomeric forms of, from formaldehyde and phenylhydrazine (WALKER), T., 1280, 1281.
$C_{16}H_{18}N_4O$, from $C_7H_8N_2$ and formaldehyde (WALKER), T., 1284.
$C_{18}H_{12}O_3$, from α-hydrindone and bromine (REVIS and KIPPING), P., **1895**, 214.
$C_{18}H_{13}BrO_2$, from monobromohydrindone (REVIS and KIPPING), P., **1895**, 214.
$C_{19}H_{12}N_2O_3$, from *o*-chlorobenzeneazosalicylic acid (HEWITT and STEVENSON), T, 1261; P., **1896**, 149.
$C_{20}H_{30}O_2$, from απ-dibromocamphor (REVIS and KIPPING), P., **1896**, 77.
$C_{23}H_{24}N_4O$, from acetophenonehydrazone and formaldehyde (WALKER), T., 1286.
$C_{25}H_{17}N_3O_2$, from *o*-chlorobenzeneazosalicylic acid (HEWITT and STEVENSON), T., 1260; P., **1896**, 149.
$C_{27}H_{24}N_4$, from benzylidenehydrazone and formaldehyde (WALKER), T., 1285.
$C_{28}H_{22}O$, from substance $C_{28}H_{22}O_2$ on reduction (JAPP and LANDER), T., 744.
$C_{28}H_{22}O$, from anhydracetonedibenzil on reduction (JAPP and LANDER), T., 745.
$C_{28}H_{22}O_2$, from the reduction of ethylic anhydrodibenzilacetoacetate (JAPP and LANDER), T., 744.

Substance, $C_{31}H_{24}O$, from the reduction of ethylic anhydrodibenzilacetoacetate (JAPP and LANDER), T., 744; P., **1895**, 146.
Substituents in the ortho-position, "protecting influence" of (MELDOLA and STREATFEILD), P., **1896**, 51.
Succinic acid from camphene (MARSH and GARDNER), T., 84; P., **1895**, 206.
absorption by silk of dilute (WALKER and APPLEYARD), T., 1346; P., **1896**, 147.
ethylic salt, molecular volume of, in organic solvents (NICOL), T., 143; P., **1895**, 237.
iso-Succinic acid. See Methylmalonic acid.
Sugar, cane-, reducing power of, on ammoniacal silver nitrate (HENDERSON), T., 150; P., **1896**, 9.
p-Sulphanilic acid, absorption by silk of dilute (WALKER and APPLEYARD), T., 1346; P., **1896**, 147.
Sulphanisic acid, preparation of (HOFMANN LECTURE), T., 697.
Sulphocarbanilide, preparation of (HOFMANN LECTURE), T., 649, 652.
Sulphur :—
Amidosulphonic acid, preparation of (DIVERS and HAGA), T., 1637; P., **1896**, 180.
formation of, by reduction of nitrososulphates (DIVERS and HAGA), T., 1615; P., **1896**, 179.
electrolytic conductivity of (SAKURAI), T., 1656; P., **1896**, 181.
and its salts, effect of heat on (DIVERS and HAGA), T., 1650; P., **1896**, 181.
action of, on plants and animals (LOEW), L., 1662; P., **1896**, 182.
Imidosulphonic acid, salts of (DIVERS and HAGA), T., 1620; P., **1896**, 179.
Nitrososulphuric acid, reduction by sodium of the salts of (DIVERS and HAGA), T., 1610; P., **1896**, 179.
Sulphurous anhydride (*sulphur dioxide*), oxidation of, in presence of water (DIXON), T., 779.
Sulphuric acid, absorption of moisture by (HAKE), P., **1896**, 34.
absorption by silk of dilute (WALKER and APPLEYARD), T., 1346; P., **1896**, 147.
use of, in nitration (HOFMANN LECTURE), T., 695.
Sumach, myricetin, the colouring matter of (PERKIN and ALLEN), T., 1299; P., **1896**, 157.
Systematic chemistry, L. Meyer's papers on (BEDSON), T., 1421; P., **1896**, 119.

T.

Tannin in bark of *Myrica nagi* (PERKIN and HUMMEL), T., 1294; P., **1896**, 145.
use of, in dyeing (HOFMANN LECTURE), T., 608.
Tartaric acid, absorption by silk of dilute (WALKER and APPLEYARD), T., 1346; P., **1896**, 147.
oxidation of, in presence of ferrous iron (FENTON), T., 546; P., **1896**, 67.
ferrous salt, behaviour of, in air (FENTON), T., 547.
Tellurium, atomic weight of Japanese (CHIKASHIGÉ), T., 881; P., **1896**, 151.
Terephthalic acid from the oxidation of camphene (MARSH and GARDNER), T., 84; P., **1895**, 206.
ethylic salt, magnetic rotatory power, &c., of (PERKIN), T., 1132, 1178, 1238.
Terpene, $C_{10}H_{16}$, from Charas (WOOD, SPIVEY, and EASTERFIELD), T., 541; P., **1896**, 76.
Tetrabenzoylfisetin (PERKIN and GUNNELL), T., 1305; P., **1896**, 158.
Tetrabenzoylluteolin (PERKIN), T., 210; P., **1896**, 37.
Tetracetylaconine, preparation and hydrolysis of (DUNSTAN and CARR), P., **1895**, 178.
Tetracetyldibromoluteolin (PERKIN), T., 210; P., **1896**, 37.
Tetracetylfisetin (PERKIN and GUNNELL), T., 1305; P., **1896**, 158.
Tetracetylluteolin (PERKIN), T., 210; P., **1896**, 37.
ar-Tetrahydro-*α*-naphthylamine, magnetic rotatory power, &c., of (PERKIN), T., 1104, 1106, 1213, 1245.
ac-Tetrahydro-*β*-naphthylamine, magnetic rotatory power, &c., of (PERKIN), T., 1104, 1106, 1213, 1245.
Tetrahydroquinoline, magnetic rotatory power, &c., of (PERKIN), T., 1117, 1214, 1245.
2 : 4 : 2′ : 4′-Tetrahydroxydiphenylacetic acid (HEWITT and POPE), T., 1268, 1269; P., **1896**, 151.
lactone of, and its triacetyl deriva-

tive (Hewitt and Pope), T., 1267, 1269; P., **1896**, 151.
Tetramethylammonium hydroxide, action of heat on (Hofmann Lecture), T., 666.
iodide, preparation of (Hoffman Lecture), T., 666.
Tetramethylaniline, nitrile and *iso*-nitrile obtained from (Hofmann Lecture), T., 710.
Tetramines, discovery of (Hofmann Lecture), T., 687.
Tetramylammonium hydroxide, action of heat on (Hofmann Lecture), T., 666.
iodide (Hofmann Lecture), T., 666.
Tetraphenylmelamine, preparation of (Hofmann Lecture), T., 716.
Tetrethylammonium hydroxide, discovery of (Hofmann Lecture), T., 665.
action of heat on (Hofmann Lecture), T., 666.
action of ethylic iodide on (Hofmann Lecture), T., 666.
iodide, discovery of (Hofmann Lecture), T., 664.
Tetrethylphosphonium hydroxide, preparation of (Hofmann Lecture), T., 672.
iodide, discovery of (Hofmann Lecture), T., 602.
preparation of (Hofmann Lecture, T., 672.
Thallium, solution and diffusion of, in mercury (Humphreys), T., 1681; P., **1896**, 220.
Theobromine periodides, preparation and properties of (Shaw), T., 102; P., **1895**, 177.
Thiocarbanil, magnetic rotatory power, &c., of (Perkin), T., 1124, 1204, 1244.
Thiocarbamides, symmetrical disubstituted, action of alkali on (Dixon), T., 857; P., **1896**, 100.
Thiocarbimides, ethereal, synthesis of (Hofmann Lecture), T., 711.
Thiophen, magnetic rotatory power, &c., of (Perkin), T., 1117, 1204, 1244.
Thiosemicarbazides and thiocarbazides, suggestions as to the nomenclature of (Dixon), T., 861.
"Thiosinnammoniumoxydhydrat, bromo-" (Dixon), T., 21.
Thymol, magnetic rotatory power, &c., of (Perkin), T., 1064, 1132, 1183, 1239.
crystalline form of (Pope), P., **1896**, 142.
Tin, rate of diffusion of, in mercury (Humphreys), T., 251; P., **1896**, 9.
Tin-alloys, solution and diffusion of, in mercury (Humphreys), T., 1682; P., **1896**, 220.
with lead, solution and diffusion of, in mercury (Humphreys), T., 1681; P., **1896**, 220.
Tissue, formation of, in plants (Cross, Bevan, and Smith), T., 1605; P., **1896**, 174.
Tolane. See Diphenylacetylene.
Toluene, discovery of, in coal-tar (Hofmann Lecture), T., 693.
separation of, from coal-tar naphtha (Hofmann Lecture), T., 598.
magnetic rotatory power, &c., of (Perkin), T., 1064, 1082—1085, 1125, 1191, 1241.
Toluene, *o*- and *p*-bromo-, magnetic rotatory power, &c., of (Perkin), T., 1064, 1131, 1203, 1243.
o- and *p*-chloro-, magnetic rotatory power, &c., of (Perkin), T., 1131, 1203, 1243.
o- and *p*-nitro-, magnetic rotatory powers, &c., of (Perkin), T., 1095, 1131, 1162, 1181, 1239.
o-Toluic acid, ethylic salts, magnetic rotatory power of (Perkin), T., 1096, 1097, 1130, 1177, 1238.
p-Toluic acid, ethylic salt, magnetic rotatory power of (Perkin), T., 1096, 1097, 1130, 1177, 1238.
o-Toluidine, refraction equivalents of, at different temperatures (Perkin), T., 4; P., **1895**, 199.
magnetic rotatory power of (Perkin), T., 1104, 1131, 1155, 1159, 1210, 1245.
m-Toluidine, magnetic rotatory powers, &c., of (Perkin), T., 1131, 1210, 1245.
p-Toluidine, discovery of (Hofmann Lecture), T., 646.
preparation of (Hofmann Lecture), T., 597.
refraction equivalents of, at different temperatures (Perkin), T., 4; P., **1895**, 199.
magnetic rotatory power of (Perkin), T., 1131, 1155, 1159, 1209, 1245.
action of cyanogen on (Hofmann Lecture), T., 590, 649.
colouring matter obtained by oxidation of (Hofmann Lecture), T., 605.
o-Toluonitrile, magnetic rotatory powers, &c., of (Perkin), T., 1096, 1137, 1206, 1244.

p-Toluonitrile, preparation of (HOFMANN LECTURE), T., 705.
magnetic rotatory power of (PERKIN), T., 1096, 1137, 1206, 1244.
o-Tolylallylthiocarbamide, action of bromine on (DIXON), T., 852; P., **1896**, 99.
u-o-Tolylaminopenthiazoline, γ-bromo- (DIXON), T., 28; P., **1895**, 216.
u-p-Tolylaminopenthiazoline, γ-bromo- (DIXON), T., 27; P., **1895**, 216.
Tolylcarbimide, preparation of (HOFMANN LECTURE), T., 715.
ab-o-Tolylcarboxyethylthiocarbamide (DORAN), T., 327; P., **1896**, 74.
ab-p-Tolylcarboxyethylthiocarbamide (DORAN), T., 328; P., **1896**, 74.
Tolylenediamine, discovery of (HOFMANN LECTURE), T., 688.
o-Tolylic methylic ether, magnetic rotatory power of (PERKIN), T., 1127, 1128, 1130, 1159, 1187, 1240.
m-Tolylic methylic ether, magnetic rotatory power of (PERKIN), T., 1127, 1128, 1130, 1159, 1187, 1240.
p-Tolylic allylic ether, magnetic rotatory power, &c., of (PERKIN), T., 1141, 1226, 1247.
methylic ether, magnetic rotatory powers, &c., of (PERKIN), T., 1127, 1128, 1130, 1159, 1187, 1240.
o-Tolylthiourea (DIXON), T., 858.
Triacetoxyhydroxydiphenylacetic acid (HEWITT and POPE), T., 1267; P., **1896**, 151.
Triethylamine, discovery of (HOFMANN LECTURE), T., 661.
action of ethylic bromide on (HOFMANN LECTURE), T., 663.
action of ethylic iodide on (HOFMANN LECTURE), T., 664.
Triethylamylammonium hydroxide, action of heat on (HOFMANN LECTURE), T., 666.
Triethylchrysaniline, discovery of (HOFMANN LECTURE), T., 622.
Triethyldiethylenetriamine, discovery of (HOFMANN LECTURE), T., 687.
Triethylenediamine (HOFMANN LECTURE), T., 684.
Triethylenetriamine, discovery of, and its salts (HOFMANN LECTURE), T., 686.
Triethylmelamine, preparation of (HOFMANN LECTURE), T., 716.
Triethylphosphine, preparation of (HOFMANN LECTURE), T., 602, 671.
action of carbon tetrachloride on (HOFMANN LECTURE), T., 680.
action of ethylic chloracetate on (HOFMANN LECTURE), T., 681.
Triethylphosphine, action of ethylenic dibromide on (HOFMANN LECTURE), T., 678.
action of iodoform on (HOFMANN LECTURE), T., 680.
action of sulphur compounds on (HOFMANN LECTURE), T., 674.
compound of, with carbon bisulphide, and its derivatives (HOFMANN LECTURE), T., 675.
compound of, with phenylthiocarbimide, and its derivatives (HOFMANN LECTURE), 676.
Triethylphosphine oxide, preparation of (HOFMANN LECTURE), T., 672.
compound of, with platinic chloride (HOFMANN LECTURE), T., 674.
compound of, with zinc iodide (HOFMANN LECTURE), T., 674.
oxychloride, preparation of (HOFMANN LECTURE), 674.
sulphide, preparation of (HOFMANN LECTURE), 675.
Triethylrosaniline, compound of, with ethylic iodide (HOFMANN LECTURE), T., 617.
Triethyltriethylenetriamine, discovery of (HOFMANN LECTURE), T., 687.
Triethylvinylphosphonium hydroxide, preparation of (HOFMANN LECTURE), T., 678.
Trihydroxylamine, hydriodide of, and the action of heat on (DUNSTAN and GOULDING), T., 840; P., **1896**, 73.
Trimellitic acid from methylpurpuroxanthin (SCHUNCK and MARCHLEWSKI), T., 70; P., **1895**, 203.
Trimethylallylammonium chloride, action of heat on (HOFMANN LECTURE), T., 670.
Trimethylbromethylammonium bromide, preparation of (HOFMANN LECTURE), T., 680.
Trimethyl*iso*butylammonium platinochloride, crystalline form of (HOFMANN LECTURE), T., 671.
Trimethylchrysaniline, discovery of (HOFMANN LECTURE), T., 622.
αββ-Trimethylglutaric acid (PERKIN and THORPE), P., **1896**, 156.
ethylic salt (PERKIN and THORPE), P., **1896**, 156.
ααβ-Trimethylglutaric acid, β-bromo-, ethylic salt, and action of alcoholic potassium cyanide on (PERKIN and THORPE), P., **1896**, 156.
Trimethylhydroxylamine, hydriodide of (DUNSTAN and GOULDING), T., 839; P., **1896**, 72.
Trimethylphosphine, preparation of (HOFMANN LECTURE), T., 671.

Trimethylpropylammonium platinochloride, crystalline form of (Hofmann Lecture), T., 671.
Trimethyl*iso*propylammonium chloride, action of heat on (Hofmann Lecture), T., 670.
Trimethylpyrogallol, magnetic rotatory power, &c., of, (Perkin), T., 1064, 1127, 1189, 1241.
Trimethylrosaniline methochloride (Hofmann Lecture), T., 625.
Triphenylguanidine, discovery of (Hofmann Lecture), T., 686.
action of cyanogen on (Hofmann Lecture), T., 715.
Triphenylmelamine, preparation of (Hofmann Lecture), T., 716.
Triphenylmethane, magnetic rotatory power, &c., of (Perkin), T., 1085, 1086, 1152, 1195, 1230, 1242.
Triphenylphosphine and its chloride (Hofmann Lecture), T., 683.
Triphenylrosaniline, constitution of (Hofmann Lecture), T., 614.
Triphenylrosanilinesulphonic acids, discovery of (Hofmann Lecture), T., 616.
Triphenylstibine: its chloride and hydroxide (Hofmann Lecture), T., 683.
Triphosphonium triiodide, preparation of (Hofmann Lecture), T., 680.
Tungstitartaric acid, salts of (Henderson and Barr), T., 1456; P., **1896**, 169.

U.

Urea, estimation of, by the hypobromite process (Allen), P., **1896**, 31.
Urine, estimation of urea in, by the hypobromite process (Allen), P., **1896**, 31.

V.

iso-Valeraldehyde, condensation of, with β-hydroxy-α-naphthaquinone (Hooker), T., 1356.
Valeric acids:—
Valeric acid, formation of, by the action of light on amylic alcohol (Richardson and Fortey), T., 1351; P., **1896**, 165.
Valeric acid, absorption by silk of dilute (Walker and Appleyard), T., 1346; P., **1896**, 147.
ethylic and amylic salts, molecular volume of, in organic solvents (Nicol), T., 143; P., **1895**, 237.
Valeric acids:—
Valeric acid, α-bromo-, ethylic salt, action of alcoholic potash on Perkin and Goodwin), T., **1470**.
action of quinoline on (Perkin and Goodwin), T., 1470.
Methylethylacetic acid (*α-methylbutyric acid; Hydrotiglic acid*), γ-bromo- (Bentley, Haworth, and Perkin), T., 174.
ethylic salt (Bentley, Haworth, and Perkin), T., 174; P., **1896**, 36.
action of ethylic sodio*iso*propylmalonate on (Bentley, Haworth, and Perkin), T., 162.
γ-chloro-, anilide of (Bentley, Haworth, and Perkin), T., 175; P., **1896**, 37.
Valeric chloride:—
Methylethylacetic chloride, γ-chloro- (Bentley, Haworth, and Perkin), T., 175; P., **1896**, 37.
Valerolactone:—
α-Methylbutyrolactone (Bentley, Haworth, and Perkin), T., 173; P., **1896**, 36.
action of hydrobromic acid on (Bentley, Haworth, and Perkin), T., 174; P., **1896**, 36.
action of phosphorus pentachloride on (Bentley, Haworth, and Perkin), T., 174; P., **1896**, 37.
Valeronitrile, preparation of (Hofmann Lecture), T., 696.
Velocity of change of alkyl ammonium cyanates into the corresponding carbamides (Walker and Appleyard), T., 193; P., **1896**, 12.
Vinylic bromide (Bentley, Haworth, and Perkin), T., 165; Haworth and Perkin), T., 175.
Violaniline, discovery of (Hofmann Lecture), T., 610.
Viscosity of aqueous solutions of sodium sulphate (D'Arcy), T., 999; P., **1896**, 104.
Volume changes during the formation of dilute solutions (Jones), P., **1895**, 179.
Volume of sulphates of potassium, rubidium, and cæsium in combination with other sulphates (Tutton), T., 497; P., **1896**, 71.
Volumes, molecular, of gases, L. Meyer's investigations on (Bedson), T., 1423; P., **1896**, 119.
of the double sulphates of potassium, rubidium, and cæsium (Tutton), T., 457; P., **1896**, 68.

Volumes, molecular, of ethylic and amylic benzoates in organic solvents (NICOL), T., 143; P., **1895**, 237.
of ethylic butyrate in organic solvents (NICOL), T., 143; P., **1895**, 237.
of ethylic and amylic formates in organic solvents (NICOL), T., 143; P., **1895**, 237.
of ethylic malonate in organic solvents (NICOL), T., 143; P., **1895**, 237.
of ethylic oxalate in organic solvents (NICOL), T., 143; P., **1895**, 237.
of ethylic salicylate in organic solvents (NICOL), T., 143; P., **1895**, 237.
of ethylic succinate in organic solvents (NICOL), T., 143; P., **1895**, 237.
of ethylic and amylic valerates in organic solvents (NICOL), T., 143; P., **1895**, 237.
of methylic, butylic, and amylic acetates in organic solvents (NICOL), T., 143; P., **1895**, 237.
Vortex atoms (FITZGERALD), T., 889; P., **1896**, 25.

W.

Wallflower, yellow, colouring matters of the (PERKIN and HUMMEL), T., 1566; P., **1896**, 185.
Water, influence of temperature on the magnetic rotatory power of (PERKIN), T., 1060; P., **1896**, 122.
influence of, on the combination of carbonic oxide and oxygen (DIXON), T., 776; P., **1896**, 55.
Water, mineral, from Landeck, L. Meyer's investigation of (BEDSON), T., 1413.
of the Knaresborough dropping well (BURRELL), T., 536; P., **1896**, 73.
Water-gas, explosive mixtures of air and (CLOWES), P., **1895**, 201.
Weld, luteolin, the colouring matter of (PERKIN), T., 206; P., **1896**, 37.

X.

Xanthone group of yellow colouring matters (PERKIN), T., 1440; P., **1896**, 167.
o-Xylene, magnetic rotatory powers, &c., of (PERKIN), T., 1130, 1159, 1192, 1193, 1229, 1241.
m-Xylene, magnetic rotatory powers, &c., of (PERKIN), T., 1130, 1159, 1192, 1193, 1229, 1241.
p-Xylene, magnetic rotatory power, &c., of (PERKIN), T., 1130, 1159, 1192, 1193, 1229, 1241.
p-Xylic acid (3 : 4-*dimethylbenzoic acid*), reduction of (BENTLEY and PERKIN), P., **1896**, 79.
1 : 3 : 4-Xylidine, colouring matter obtained by oxidation of (HOFMANN LECTURE), T., 605.
Xylidine-red, discovery of (HOFMANN LECTURE), T., 620.
Xylose, existence of formal derivatives of, in cereal celluloses (CROSS, BEVAN, and SMITH), T., 804; P., **1896**, 96.
identification of, in soluble products of the acid hydrolysis of cellulose (CROSS, BEVAN, and SMITH), T., 811; P., **1896**, 96.
Xylylcarbimide, preparation of (HOFMANN LECTURE), T., 715.
ab-m-Xylylcarboxyethylthiocarbamide (DORAN), T., 329; P., **1896**, 74.

Y.

Yeast, fermentation of furfuroids by (CROSS, BEVAN, and SMITH), T., 816; P., **1896**, 96.

Z.

Zinc, rate of diffusion of, in mercury (HUMPHREYS), T., 251; P., **1896**, 9.
Zinc alloys with cadmium, solution and diffusion of, in mercury (HUMPHREYS), T., 1681; P., **1896**, 220.
with copper, solution and diffusion of, in mercury (HUMPHREYS), T., 1682; P., **1896**, 220.
Zinc cæsium sulphate, density and optical behaviour of (TUTTON), T., 383.
potassium sulphate, density and optical behaviour of (TUTTON), T., 374.
rubidium sulphate, density and optical behaviour of (TUTTON), T., 379.

ERRATA.

Vol. LVII (Trans., 1890).

Page	Line		
654	bottom	*for*	"$C_8H_{14}<^{CH\cdot CH\cdot OH}_{C\cdot O\cdot CO}$" *read* "$C_8H_{14}<^{CH—CH\cdot OH}_{CH\cdot O\cdot CO}$."

Vol. LXVII (Trans., 1895).

1014	17*	„	"Ag" *read* "Hg."
1015	5*	„	"and" „ ";".
1017	11*	„	"hydrochloric" *read* "zinc and sulphuric."

Vol. LXIX (Trans., 1896).

376	bottom	„	"hypobolic" *read* "hyperbolic."
386 402 414 422	11* 13* 16* 7*	„	"axis" *read* "index."
418	3	„	"463" *read* "343."
420	14	„	"$\psi : \chi : \omega$" *read* "$\chi : \psi : \omega$."
569	19	*delete*	"Liversidge, Prof." from the list of members resigned.
596	12*	*for*	"D.C.L." *read* "LL.D."
615	footnote 1*	„	"$C_{20}H_{16}(C_6H_5)_5N_3H_2O$" *read* "$C_{20}H_{16}(C_6H_5)_3N_3H_2O$."
718	11 12 13	„	"melaniline" *read* "melamine."
870	13 and 25	„	"Blockman" *read* "Blochmann."
871	12	„	"Lebedingebb" *read* "Lebidinzeff."
871	13	„	"290" *read* "1290."
1063	13*	„	"chloride" *read* "dichloride."
1611	15*	„	"40 per cent." *read* "20 per cent. anhydrous."
1614	12*	„	"that more than" *read* "more than that."
1615	3*	„	"hyponitrate" *read* "hyponitrite."
1619	5*	„	"acid" *read* "oxide."
1626	18*	„	"$(HO)_5Pb_4NS_2O_6$" *read* "$(HOPb)_3NS_2O_6$."
1626	7*	„	"$(HOPb)_5NS_2O_6$" *read* "$(HO)_5Pb_4NS_2O_6$."
1627	14*	„	"of basic" *read* "or basic."
1630	bottom	„	"mercuric" *read* "mercurous."
1640	2*	„	"nitrate" *read* "nitrite."
1652	5*	*after*	"ammonium" *insert* "(m. p. 135°)."
1652	4*	„	"sium" *insert* (m. p. 212°)."
1654	14*	*for*	"*ad/bd*" *read* "*bd/ad*."
1667	15* 14*	„	"a mercuric salt" *read* "mercuric nitrite and nitrate."
1675	bottom	„	"Ginboch" *read* "Guibourt."

* From bottom.

Harrison and Sons, Printers in Ordinary to Her Majesty, St. Martin's Lane.